

# GUIDE FOR WORKING ON PROJECTS UNDER OSHPD JURISDICTION



## *Tips from the Experts*

Office of Statewide Hospital Planning and Development

Revised September 27, 2023

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## PREAMBLE

In March 2006 the California Healthcare Foundation published the “Best Practices for Project Management, Design, and Construction of Buildings Under OSHPD Jurisdiction.” The “Best Practices Manual” was developed in conjunction with the California Hospital Association (CHA), the California Society for Healthcare Engineers (CSHE), the Office of Statewide Health Planning and Development (OSHPD), and a task force comprised of stakeholders from the hospital design, inspection, and construction industries. It quickly became the “gold standard” for hospital design, inspection, and construction and served as a model for avoiding costly delays sometimes associated with large, complex projects.

The hospital industry in California is indebted to the California Healthcare Foundation for undertaking this monumental task. With the Foundation’s consent, the Hospital Building Safety Board (HBSB), comprised of experts from all aspects of the hospital construction industry, in conjunction with the OSHPD, updated the Best Practices Manual and reissued it as the “Guide for Working on Projects Under OSHPD Jurisdiction – Tips From the Experts.”

This Guide reflects many years of experience by all stakeholders involved in hospital construction, including owners, designers, inspectors, contractors, etc. and was vetted through a number of public meetings. It should be used as a general guide and is not intended to replace, supersede, or alter the requirements of the California Building Standards Code or any other enforceable regulations, codes, or standards for hospital construction.

This Guide reflects the enforceable building codes and regulations at the time of its publication and may not reflect requirements in subsequent editions. Therefore, it is intended that this Guide be a “living document” which is updated with each triennial building code cycle. Substantive changes in hospital construction project delivery, plan review, and or construction methods may also necessitate an update of the Guide. I wish to thank the HBSB, all OSHPD staff who participated, and the public who attended the meetings and provided valuable input for the many hours expended on the Guide’s development. Use of this Guide is discretionary; however, I think that you will find its use to be a good investment toward improving the quality of hospital construction projects and the working relationship between all parties involved in the process.

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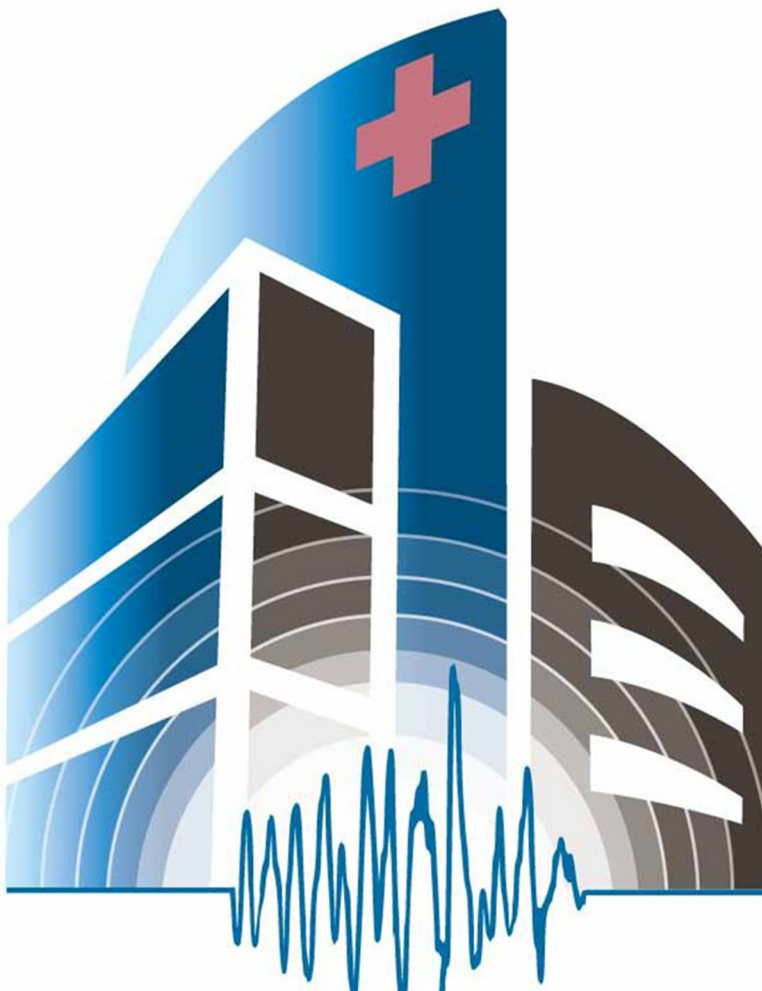


## SECTION 1

Introduction  
to the  
Department of  
Health Care  
Access  
and  
Information

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Office of  
Statewide  
Hospital  
Planning  
and  
Development





## **SECTION 1**

### **Introduction to the Office of Statewide Hospital Planning and Development**

#### **1.0 Introduction**

The Sylmar earthquake of 1971 caused the collapse of several hospital buildings, endangering the lives of patients in those hospitals at the time and rendering the hospitals incapable of providing emergency care to people injured in the earthquake. As a result, the California state legislature passed the Alfred E. Alquist Hospital Facilities Seismic Safety Act (HSSA) and, since 1973, all hospital construction has been governed by the provisions of that legislation. The state preempted local building departments to ensure statewide uniformity in health facility construction standards. The standards are intended to ensure that vulnerable patients are safe in an earthquake and that the facilities remain functional after such a disaster, thereby being capable of providing care for injured persons in the community.

Pursuant to the HSSA, the Department of Health Care Access and Information (HCAI), formerly the Office of Statewide Health Planning and Development is responsible for overseeing all aspects of the design and construction of general acute care hospital, psychiatric hospital, skilled nursing home and intermediate care facility construction in California. Its responsibilities include establishing building standards that govern construction of these types of facilities; reviewing the plans and specifications for new construction, alteration, renovation, or additions to health facilities; and observing construction in progress to ensure compliance with the approved plans and specifications.

In addition, HCAI is responsible for establishing the building standards for freestanding licensed clinics, but plan review and construction observation functions are the responsibility of local building departments. For two types of clinics—dialysis clinics and surgical clinics—local building departments may defer these functions to HCAI or the facility owner may request that HCAI provide plan review and construction oversight services.

HCAI's responsibilities under the HSSA are carried out by the Office of Statewide Hospital Planning and Development (OSHPD), formerly the Facilities Development Division. The design, construction, and quality assurance oversight process entails the following: construction drawings and specifications are submitted to the OSHPD and reviewed for code compliance by their architects; structural, electrical, and mechanical engineers; and fire and life safety personnel assigned to the specific regional group defined by the geographical location of the project. Upon approval of the project plans, specifications and Test, Inspection, and Observation (TIO) Plan, a building permit is issued and construction begins. The facility owner hires one or more OSHPD certified Inspectors of Record (IOR), who work under the direction of the registered design professional throughout the construction phase and reports to OSHPD field personnel and the owners on the progress of the construction. The IOR notifies the registered design professional of discrepancies between approved design documentation and constructed conditions and requests direction by the registered design professional for

proper resolution. Resolution that results in a material change to the project requires a submittal of amended construction documents by the registered design professional. Otherwise, the OSHPD field personnel confirm the acceptability of the resolution by review of a field log maintained by the IOR.

OSHPD field personnel make periodic visits to the construction site to ensure that the seismic, fire and life safety, and other requirements of the building code are being met. Once construction is completed and required close-out documentation is submitted to OSHPD, a certificate of occupancy or a construction final is issued by OSHPD.

OSHPD serves as a “one-stop shop” for all aspects of health care facility construction. All architectural, geotechnical, structural, mechanical, electrical, and fire and life safety considerations for inpatient healthcare facility physical plants are handled by OSHPD. The California Department of Public Health Licensing and Certification Division ensures that the organization and operation of health facilities meet specified standards (e.g., staffing ratios and qualifications, quality of care protocols, and emergency action plans).

The OSHPD team also plays an important role in the aftermath of an earthquake or other disaster, by being dispatched to assess the extent of damage to health facilities in the affected communities. Based on these assessments, the facilities are cleared to continue providing care without interruption or, if the damage is severe enough, the facility may be closed. The results of these assessments are communicated to state and local emergency response personnel, so that they can route patients to safe facilities. OSHPD staff also review and approve on-site construction required for mitigation of earthquake damage to the facility.

## **1.1 Authority of OSHPD**

OSHPD oversees certain aspects of the integrity and safety of the built environment for:

- New building construction.
- All aspects of existing facility remodels, additions and/or modifications that affect architectural, electrical, mechanical, and structural systems and work that affects fire and life safety conditions, including replacement of equipment.
- Compliance with the conditions and deadlines established by California Hospital Seismic Retrofit Program (Chapter 740, Statutes of 1994, and referred to as Senate Bill 1953).

The basis for OSHPD’s authority is established by statute in the California HSSA. The regulations enforced by OSHPD are contained in the California Building Standards Code, Title 24, California Code of Regulations (Title 24).

- Part 1 of Title 24 is the California Administrative Code (CAC) and defines the administrative procedures necessary for the design, construction and inspection of facilities development, along with those for the seismic retrofit requirements of the HSSA.

- Part 2 of Title 24 is the California Building Code (CBC), which establishes all of the technical requirements of the built environment.
- Part 3 of Title 24 is the California Electrical Code, which establishes all of the technical requirements of the built environment.
- Part 4 of Title 24 is the California Mechanical Code, which establishes all of the technical requirements of the built environment.
- Part 5 of Title 24 is the California Plumbing Code, which establishes all of the technical requirements of the built environment.
- Part 6 of Title 24 is the California Energy Code, which establishes the energy efficiency standards for occupied buildings in an effort to reduce overall energy use.
- Part 9 of Title 24 is the California Fire Code, which establishes all of the technical requirements of the built environment.
- Part 10 of Title 24 is the California Existing Building Code, which establishes the requirements for the alteration, addition, replacement, reuse and repair of existing buildings.

The responsibility for administering the code development process, adopting and publishing Title 24 rests with the California Building Standards Commission. OSHPD is one of a number of state agencies that proposes amendments to Title 24.

The scope of authority for OSHPD extends to many types of healthcare buildings. It does not normally include medical office buildings or other non-hospital buildings on a campus. Other elements of the medical campus such as the right to site an acute care facility, grounds and landscaping, parking lot construction, and the general aesthetics of the site remain in the domain of the local government. Site development may also come under the requirements of the California Environmental Quality Act (CEQA). Local health departments govern issues related to operation of food preparation areas in acute care buildings. Hospitals must recognize and account for local jurisdiction entitlements, design review, and site engineering approvals, which are completed outside of OSHPD jurisdiction but are required to be completed prior to issuance of an OSHPD permit.

Unless notified in writing by a local jurisdiction of requirements which are more stringent than the California Building Standards Code, OSHPD does not enforce regulations that are not adopted by the State of California. Hospital owners must ensure that the hospital's design team is responsible for compliance with the Americans with Disabilities Act (ADA) or Medicare Conditions of Participation requirements when appropriate.

## **1.2 OSHPD Structure**

OSHPD personnel are divided into three major sections: Division Support Section, Building Safety Section, and Structural Services Section (there are multiple work Units within each Section), plus some additional units.

### **A. Division Support Section**

The Division Support Section manages all major administrative functions of. It is comprised of two distinct units: the Contracts and Fiscal Unit and the Business and Administrative Support Unit.

### **B. Building Safety Section**

The Building Safety Section manages technical considerations relative to the regulations, design, inspection and construction of new buildings and/or modifications to existing buildings. Within the Building and Safety Section there are six regions, based on geographical assignments, and four specialized units. Each geographic region has both an Architectural and Engineering Unit and a Field Compliance Unit to provide plan review and field observation services.

#### **1) Architectural and Engineering Unit**

The Architectural and Engineering Unit is responsible for ensuring that all plans for work within a hospital building are properly prepared by California licensed design professionals, and that the plans conform to the requirements of the California Code of Regulations (CCR). Each regional Architectural and Engineering Unit is managed by a regional supervisor who oversees the work of a staff of plan reviewers comprised of licensed architects and electrical, mechanical, and structural engineers, as well as fire and life safety officers.

#### **2) Field Compliance Unit**

The Field Compliance Unit oversees the construction inspections of facilities within the geographic boundary of their respective region. This oversight enhances the construction quality of hospital facilities and fosters better lines of communication between OSHPD and the various architects, geologists, engineers, inspectors and contractors involved in hospital construction. A Regional Compliance Officer (RCO) supervises a staff comprised of compliance officers, district structural engineers, and fire and life safety officers. Details on working with OSHPD field staff can be found in Section 6 of this Guide.

#### **3) Building Standards Unit**

The Building Standards Unit is responsible for the ongoing development of modifications to Title 24 that improve the safety and quality of the design, inspection, and construction processes in California. The group develops tools used for interpreting code called Code Application Notices (CANs) and Policy Intent Notices (PINs) that are used by designers and hospital personnel to better understand the affected regulations.

#### **4) Fire Prevention Unit**

The Fire Prevention Unit is responsible for the ongoing development, enforcement and application of code provisions that improve conditions for fire and life safety in both new and existing healthcare facilities. The Fire Prevention Unit also has a Fire Life Safety Academy for the recruitment and training of Fire Life Safety Officers.

#### **5) Inspection Services Unit**

The Inspection Services Unit is charged with the review of all matters relative to the quality assurance and quality control of building projects. Standards of care and practices by project inspection personnel and test laboratories are established and monitored by the unit. Practices associated with the onsite management of the Test, Inspection, and Observation (TIO) Programs are evaluated and modified as needed to improve the statewide application of hospital building construction.

### **C. Structural Services Section**

The Structural Services Section is charged with distinct responsibilities associated with structural and seismic considerations of buildings and building system components. It is comprised of the Seismic Compliance Unit and the Structural Support Unit.

#### **1) Seismic Compliance Unit**

The Seismic Compliance Unit is responsible for the management of ongoing compliance plans and progress associated with the Hospital Seismic Retrofit Program. Senate Bill 1953 (SB 1953) (Chapter 740, Statutes of 1994) became effective on January 1, 1995. The bill was an amendment to and furtherance of the Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1983 (Alquist Act). SB 1953 (Chapter 740, 1994) is now chaptered into statute in Sections 130000 through 130070 of the Alfred E. Alquist Hospital Facilities Seismic Safety Act and is part of the California Health and Safety Code.

#### **2) Structural Support Unit**

The Structural Support Unit is responsible for the Structural Regulations, Quality Assurance, Plan Review Contract management, review of Geotechnical/Geohazards Reports and the Preapproval programs for equipment special seismic certification, equipment anchorage and restraint, and standard details.



### 1.3 Hospital Building Safety Board

The Hospital Building Safety Board (HBSB) is appointed by the Director of HCAI. The HBSB advises the Director on the implementation of the HSSA and acts as a board of appeals in all matters of the administration and enforcement of building standards relating to the design, construction, alteration, and seismic safety of hospital building projects submitted to the Office.

**Tip:** The Office also has an informal appeals process known as Comment and Process Review (CPR) which may be used to promptly resolve issues concerning plan review and construction observation comments or processes in an informal manner.

### 1.4 Enforcement

OSHPD is responsible for determining whether a hospital is in compliance with the requirements of Title 24. Operating compliant facilities is a basic requirement of Title 22 of the California Code of Regulations. Facility compliance is also a consideration for Centers for Medicare and Medicaid (CMS) certification and for accreditation by The Joint Commission.

If a hospital is found in violation of Title 24, OSHPD may take either formal or informal action. Informal action takes the form of instructions to correct the noncompliant condition. Formal actions are more severe and can have significant impacts on a hospital construction project.

Examples include:

- A Notice to Stop Work.
- A Noncompliance Letter for work performed without a permit (commonly referred to as “bootlegged” work or unauthorized construction).

Even if Licensing & Certification chooses not to take action as a result of a noncompliance condition cited by OSHPD, there still remains heightened risk to the hospital from action by the Centers for Medicare and Medicaid that could materially affect the hospital’s Medicare payment or The Joint Commission Accreditation. Noncompliance matters should be taken very seriously.

### 1.5 OSHPD Plan Review and Permitting Processes

OSHPD has several processes available for plan review, approval, and permitting. The type, size, and complexity of projects will often be the guiding factors used to determine which process is most suitable. The processes are: Standard Review, Managed Project Review, Integrated Review, Expedited Review, Critical Path Expedited Review, Over-the-Counter Review, Field Review, and SB 1838 Exempt.



**Tip:** The designer may contact the Regional Supervisor prior to submittal of an application to the Office to assist them in determining the process which best fits their project's needs.

## 1.6 OSHPD Electronic Services Portal

The Electronic Services Portal (eSP) is a comprehensive information management system based on the Accela Automation software system. eSP implements a number of workflow controls which guide the user through the OSHPD business process, limiting the choices of the user to those that are compatible with the OSHPD policies. The program allows specific users to perform the following tasks: project intake, triage, triage results, plan review, plan approval, application for building permit, construction start, field operations, project closure, and archive documents.

**Tip:** Detailed information on the electronic submission process can be found in the following webpage: [hcai.ca.gov/construction-finance/eservices-portal-information/](https://hcai.ca.gov/construction-finance/eservices-portal-information/)



## SECTION 2

### Geologic Hazards Investigation Guidelines

**California Geological Survey - Note 48**  
Checklist for the Review of Engineering Geology and Seismology Reports for  
California Public Schools, Hospitals, and Essential Services Buildings  
January 1, 2011

Note 48 is used by the California Geological Survey (CGS) to review the geology, seismology, and geologic hazards evaluated in reports that are prepared under California Code of Regulations (CCR), Title 24, California Building Code, CCR Title 24 applies to California Public Schools, Hospitals, Skilled Nursing Facilities, and Essential Services Buildings. The Building Official for public schools is the California State Architect (DSA). Hospitals and Skilled Nursing Facilities in California are under the jurisdiction of the Office of Statewide Health Planning & Development (OSHPD). The California Geological Survey serves under contract with these two state agencies.

Project Name: \_\_\_\_\_ Location: \_\_\_\_\_  
OSHPD or DSA File #: \_\_\_\_\_ Reviewed By: \_\_\_\_\_  
Date Reviewed: \_\_\_\_\_ California Certified Engineering Geologist #: \_\_\_\_\_

**Checklist Item or Topic Within Consulting Report**

NA = not applicable	NR = not addressed by consultant and therefore not reviewed at this time	Adequately Described: Satisfactory	Additional Data Needed: Not Satisfactory
<b>Project Location</b>			
1. Site Location Map, Street Address, County Name: Correctly plot site on a 7½-minute USGS quadrangle base map.			
2. Plot Plan with Exploration Data and Building Footprint: One boring or exploration shaft per 5000 sq. ft., with minimum of two for any site building. Exploratory trench locations.			
3. Site Coordinates (Latitude & Longitude):			
<b>Engineering Geology/Site Characterization</b>			
4. Regional Geology and Regional Fault Maps:			
5. Geologic Map of Site: Detailed (large-scale) geologic map with proper symbols and geologic legend.			
6. Subsurface Geology: Engineering geologic description summarized from boreholes or trench logs.			
7. Geologic Cross Sections: Two or more detailed geologic sections with pertinent foundations and site grading.			
8. Active Faulting & Cosismic Deformation Across Site: Show proposed structures in relation to local agency (city or county) show location of fault investigation trenches; 50-foot setbacks perpendicular from fault plane and proposed building footprints.			
9. Geologic Hazard Zones (Liquefaction & Landslides): (If applicable) Show proposed structures in relation to CGS official map showing zones of required investigation for liquefaction and landslides, and/or any pertinent geologic hazard map from the local agency (city or county).			
10. Geotechnical Testing of Representative Samples: Broad suite of appropriate geotechnical tests. Discuss engineering geologic aspects of excavation/grading activities, foundation and support of structures. Include geologic and geotechnical inspections and problems anticipated during grading.			
<b>Seismology &amp; Calculation of Earthquake Ground Motion</b>			
12. Evaluation of Historical Seismicity: Prepare a short description of how historical earthquakes have affected the site.			
13. Classify the Geologic Subgrade (Site Class): 2010 CBC Table 1613A.5.2 and parameters $S_e$ , $S_1$ , $S_2$ , and $S_{max}$ . Recommended method for establishing map values found at: <a href="http://calgeotech.org/consensusresearch/consensusdesign/">http://calgeotech.org/consensusresearch/consensusdesign/</a>			
14. General Procedure Ground Motion Analysis: Follows 2010 CBC §1613A.5. Report			
15. Seismic Design Category: Report if $S_e > 0.75$			
32. Geology, Seismology, and Engineering Geology			
33. Certified Engineering Geologist			
34. Registered Geotechnical Engineer			



## SECTION 2

### Geologic Hazards Investigation Guidelines

#### 2.0 Introduction

Identification of seismic and geologic hazards present on the site of a proposed hospital construction project occurs before the design of a building is begun. Seismic and geologic hazards affecting building construction and performance may include (but not be limited to) the following:

- Potential earthquake shaking.
- Surface fault rupture.
- Liquefaction.
- Earthquake-induced landslides.
- Slope instability.
- Weak and/or sensitive soils.
- Shallow groundwater.
- Flooding.
- Tsunami.
- Volcanic eruptions.
- Hazardous minerals.

*It is important to note these hazards may occur in combination.*

#### 2.1 Overview of the Process

Among the documents included in hospital construction permit applications is a geologic hazards report. Chapters 16 and 16A (Structural Design), 18 and 18A (Soils and Foundations) in the California Building Code, Part 2, Title 24, and the California Existing Building Code, Part 10 of Title 24 address the required elements of seismic and geologic hazards reports to be prepared and signed by the registered engineering geologist of record (GOR) and registered geotechnical engineer of record (GEOR).

Applications for new projects are submitted to OSHPD, which forwards the seismic and geologic hazards report component to the California Geological Survey (CGS) for review and comment when appropriate. CGS geologists and seismologists provide technical information and advice to OSHPD regarding geologic hazards with the potential to adversely affect hospitals. Using CGS Note 48, Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings, CGS staff prepare memoranda documenting their geologic reviews of hazard reports prepared by the hospital's consultants. Of primary concern is compliance with the current building code. These review memoranda are submitted to OSHPD for incorporation into their project decision-making process.

***Tip: Retain experienced geotechnical and engineering geological consultant firms with duly registered California Geotechnical Engineers and Certified Engineering Geologists to perform the geologic hazard investigation.***

**Tip:** The geotechnical and engineering geological consultants should be aware of any updates of CGS Note 48 issued by the California Geological Survey.

## A. Site Investigation

A site investigation is required to document the geologic conditions at the site. Projects involving new building construction, structural retrofit work, etc. often can't be approved without adequate and/or appropriate geologic data. Prior to collecting data, the GOR will conduct reconnaissance, such as review of historical air photos, geologic maps and data collected during previous work at the site, to understand what potential geologic issues may exist at the site and plan an appropriate exploration strategy.

*Sites within Alquist-Priolo Earthquake Fault Zones (or local equivalents) should perform fault investigations well in advance of building design.*

Exploration methods will vary depending upon the local geologic conditions and hazards being investigated, but at a minimum, will include drilling of subsurface borings. Chapter 18A of the CBC requires one boring per 5,000 square-feet of building (plan area) and a minimum of two borings per building to appropriate depths. Soil samples are collected from various soil layers encountered in the boring for laboratory testing to determine soil properties. Data and reports from previous geologic investigations at the site may be used to supplement site investigations of future projects so long as the data are located in close proximity and are relevant to the project to be constructed.

## B. Unusual Projects

Sites within Alquist-Priolo Earthquake Fault Zones (or local equivalents) should perform fault investigations well in advance of building design. CGS should have the opportunity to review fault trenches in the field. Sites within regulatory earthquake hazard zones (or local equivalents), in addition to standard subsurface borings, and or cone penetration test soundings, may also require supplemental data collected using methods such as down-hole logging and assessment of seismic wave velocity.

## C. Hazard Mitigation

Once the site investigation is completed and all geologic hazards are identified and characterized, as necessary and appropriate, the GEOR and GOR will provide mitigation recommendations. Geologic hazard mitigation typically includes removal of weak soils, ground improvement, foundation recommendations, or combinations thereof. Avoidance is the only acceptable mitigation for fault rupture hazard. Where active faults are known to cross a project site, a 50-foot minimum setback is required.

## 2.2 Geologic Hazards Report

After completion of site investigation activities and laboratory testing, the GOR and GEOR will compile a report documenting all site investigation activities and the results of laboratory testing, a summary of all important findings, and appropriate recommendations. A complete report may include (but not be limited to) the following:

- A summary of important findings.
- A site plan showing the location of site investigation activities with respect to the footprint of each building.
- Regional and site-specific geologic maps.
- Highest historical groundwater information.
- Cross sections.
- Ground motion analysis.
- Copies of all laboratory test results.
- Copies of all calculations (including all input parameters).
- Mitigation recommendations.

## 2.3 Approval of Seismic and Geologic Hazard Reports

Upon receipt of reports transmitted from OSHPD, CGS reviewers will assess the document(s) for completeness with respect to CGS Note 48. After reviewing the documents, CGS will submit a letter to OSHPD either noting the geologic and seismic hazards are adequately addressed or summarizing inadequacies and requesting additional information. When additional information is requested, CGS will review the supplemental data and analysis and submit a letter to OSHPD stating whether all of the geologic and seismic hazards are adequately addressed. In some cases, site ground improvement mitigation methods will result in a conditional approval of the project. Full approval of the project is granted after the GOR and GEOR complete the recommended ground improvement activities and provide a revised hazard report documenting the improved site conditions. For seismic upgrades or additions to existing structures, certain projects are exempt from geologic hazard review by the CBC. Upgrades and additions subject to geologic hazards review by CGS will be subject to all of the requirements outlined in CGS Note 48.

**Tip:** *The Geologic Hazards Report should be submitted as early in the process as possible so that it does not become the critical path for project plan approval. Allow adequate time for CGS review and response to comments if needed.*

**Tip:** *If there are changes during the design that may affect the findings and/or the recommendations of the Geologic Hazards report, supplemental or addenda reports should be prepared and submitted to OSHPD as soon as possible to avoid project delays.*





## SECTION 3

### Plan Design and Review Guidelines





## SECTION 3 Plan Design and Review Guidelines

### 3.0 Introduction

Hospitals by their nature are large, complex buildings and hence so are the construction projects to build or renovate them. Before any construction can commence, the Office of Statewide Hospital Planning and Development (OSHPD) must review and approve the various construction documents.

Renovation projects under \$500,000 in construction cost comprise the majority of project plans reviewed by OSHPD. Often construction documents prepared for these projects are produced by architects and engineers who may have limited experience in healthcare design. Submitting consistently formatted construction documents, applying quality review checklists, and following practices that are proven to be effective, such as those outlined in this Guide, and other national healthcare related organizations [e.g., Association for Professionals in Infection Control and Epidemiology, Inc., (Apic) Association for Operating Room Nurses (AORN)] – all have the potential to improve and accelerate plan review and construction activities. Clearly prepared construction documents will also facilitate the contractor’s ability to efficiently construct projects. The design team should meet with OSHPD staff as needed during predesign and design phases to review and confirm design issues.

*These guidelines represent minimum guidelines for recommended practices; licensed design professionals and hospital representatives may want to go above and beyond the guidelines presented here.*

Although OSHPD cannot mandate the organization and style of construction documents, the guidelines outlined in this section should provide a consistent approach for preparation of construction documents that will facilitate the plan check review process. These guidelines represent minimum standards for recommended practices; licensed design professionals and hospital representatives may want to go above and beyond the guidelines presented here.

Keep in mind that the “Guidelines and Tips” outlined in this section are only general guidelines meant to serve as a reference tool. They are to be used in conjunction with the contract documents and do not, in any way, supersede or alter specific requirements of the project contract, drawings, specifications, and enforceable codes.

### 3.1 Role of the Registered Design Professional

The Health and Safety Code and the California Administrative Code state that “all construction documents or reports...shall be prepared under an architect or engineer in responsible charge.” As much as the California Architects’ Practice Act mandates architectural services to be provided under the “responsible control” of the licensed Architect exercising due “standard of care,” the preparation of documents for complex

buildings like hospitals, mandates a high level of responsibility over the content and design captured in the construction documents.

For large hospital projects, much of the actual work may in fact be delegated to other design professionals. Regardless of how the work is proportioned out, administration of the work remains the responsibility of the Registered Design Professional in responsible charge for the project. Although there may be some specific projects that are exclusive of architectural or structural work, which may be completed by other California registered engineers, it is important that the Architect understand when this applies under OSHPD regulations. Please see Section 7-115 of the California Administrative Code (CAC) for further information.

*OSHPD submittals, including all drawings, specifications and other design and administration documents are required to be signed by the Registered Design Professional in Responsible Charge.*

Except as provided for in CAC Section 7-115, OSHPD submittals, including all drawings, specifications and other construction documents are required to be stamped and signed by a California Registered Design Professional. The CAC states that “all construction documents shall be signed and stamped prior to issuance of a building permit.”

**Tip:** *Although some professionals are only required to sign the final construction documents, the Registered Design Professional should stamp and sign all formal submittals to OSHPD to demonstrate he/she has exercised responsible charge as required.*

**Tip:** *The design team should meet with the appropriate OSHPD staff as needed during the predesign and design phases to reduce rework. Refer to CAN 2-102.6.*

## **A. Working with the Authority Having Jurisdiction**

The Registered Design Professional is responsible for ensuring that the project conforms to the local jurisdiction requirements as well as those enforced by OSHPD. Many jurisdictions have documents that supplement the requirements of Title 24 such as General Plans, Zoning and Planning Standards, etc., and in many of these cases the requirements are more restrictive and/or will significantly impact the design of the project. It is the Registered Design Professional’s responsibility to be knowledgeable of the unique requirements of the local jurisdiction. OSHPD will not coordinate the requirements of the local jurisdiction for the project.

*The Registered Design Professional ultimately takes full responsibility for working with the appropriate agencies.*

OSHPD relies on the Registered Design Professional to coordinate the local requirements with the project, in particular, any zoning and/or unique building code requirements imposed by a local jurisdiction need to be coordinated with the local agency. With a new building project especially, the site work will fall under the jurisdiction of the local agency.

However, OSHPD will exercise its jurisdiction over building related site work, utilities, and systems which have a direct impact on code compliance for the hospital building, such as the site fire water line, as well as other jointly-reviewed features. Other site accessibility requirements will be under the purview of the local jurisdiction. Refer to CAN 1-7-103.

In addition to the local jurisdiction and OSHPD, many other agencies approve or permit a hospital project. OSHPD is the permitting agency for the building. The California Department of Public Health licenses these facilities and enforces regulations that are in addition to OSHPD's. For example, cafeterias require the local health department's approval; the use of a grease interceptor will require the review of the local water pollution agency; a storm water prevention plan might need to be filed; and an emergency generator or boiler might trigger an air quality review. This list is not comprehensive. The Registered Design Professional ultimately takes full responsibility for working with the appropriate agencies. To avoid delays, the Registered Design Professional must ensure that all appropriate approvals are obtained prior to a final permit being issued by OSHPD. Some of these entities are listed below:

- Local Jurisdiction Public Works Standard for Public Streets, Sidewalks and Curbs, Site Grading and Drainage, etc.
- Local Jurisdiction or Regional District for Sewer and Water Connections.
- Local Jurisdiction Fire Department or Fire District Requirements for Fire Hydrant and Connection Locations.
- Local Jurisdiction Planning Landscaping Requirements for Public Rights-of-Way.
- County Health Department for Food Service Facilities Operations.
- County Health Department for Radiation Protection Requirements.
- California Air Quality Management Districts for Construction and Emergency Generator and Boiler Operations.
- Local Jurisdiction for parking, site accessibility, and other site improvements.
- Local school district for school fees

**Tip:** *“Although not reviewed by OSHPD, healthcare accrediting agencies requires completion of an infection control risk assessment (ICRA) for determining potential risks to the environment during construction. The Infection control risk assessment should occur during the design phase and prior to start of construction.”*

## B. The California Environmental Quality Act

The local jurisdiction is typically the lead agency in the California Environmental Quality Act (CEQA) process. The Registered Design Professional is responsible for ensuring that the project conforms to the requirements of CEQA. Minor renovations normally do not trigger CEQA compliance, but a major addition or remodel might. New buildings will require CEQA compliance, even if it is declared not to have an impact to the environment (a Negative Declaration). Specific requirements and regulations for CEQA can be found at <http://ceres.ca.gov>.

OSHPD relies on the Registered Design Professional to coordinate the local requirements with the project, in particular, any zoning and/or unique building code requirements imposed by a local jurisdiction need to be coordinated with the local agency. With a new building project especially, the site work will fall under the jurisdiction of the local agency.

However, OSHPD will exercise its jurisdiction over site work, utilities, and systems which have a direct impact on code compliance for the hospital building, such as the site fire water line as well as other jointly reviewed features.

**Tip:** To avoid delays the Registered Design Professional must ensure that all appropriate approvals are obtained prior to final permit being issued by OSHPD.

## 3.2 General Guidelines for the Project Drawings

### A. Quality in Documentation

Many architectural firms have documentation standards that are the mainstay of their practice, developed over many years of successful projects and improved upon as codes and technology have evolved. The guidelines offered in this section are not meant to suggest a better way of performing architectural documentation, but are intended to offer suggestions to individuals and firms that do not have the benefit of developing standards that many larger firms must do to ensure quality documents.

*Upon receipt, each submittal is logged in and reviewed by OSHPD Architects, Electrical, Mechanical, and Structural Engineers, and Fire and Life Safety Officers, to determine if the submittal is complete.*

The “customers” for the architectural documents are large and varied—clients, engineers and consultants, contractors and vendors, as well as building officials. Although some are knowledgeable on how to read and use construction documents, there are still those who will be unfamiliar with specific graphic conventions, or common ways that are unique to an individual practice. The best method is to be sure the documents are as user friendly as possible.



For every project, the goal is to prepare a set of coordinated documents that appears to have been prepared by a single entity. It is important that all disciplines (and outside consultants) adhere to the same set of basic graphic standards that guide the preparation of the architectural documents.

To assist in communication and coordination across the design and construction industry, organizations like the AIA, CSI and National Institute of Building Sciences work jointly to create national standards for consistent documentation and data organization (see <http://www.nationalcadstandard.org> for more information.).

Another approach to creating better, more complete documents includes the development and use of checklists. These can be created specifically for a project, or developed for particular project types, to help ensure consistency and completeness from project to project. OSHPD offers their own standard comments and reminder lists, developed by plan reviewers, for the design professionals to utilize when developing their documents, or as a quality- control review prior to submitting documents for review.

***Tip: Use the reminder lists on OSHPD's website to assure project code compliance and thus reduce overall time to project approval.***

***Tip: Use the same basic graphic standards for all disciplines to ensure the documents are coordinated.***

Once the documents for a project are deemed complete and coordinated by the Registered Design Professional, they are submitted to OSHPD along with an Application for New Project. The office plan review process starts with triage. Upon receipt, each submittal is logged in and reviewed by OSHPD Architects, Electrical, Mechanical, and Structural engineers, and Fire and Life Safety Officers, to determine if the submittal is complete. If deemed a complete submittal, OSHPD will process the documents in one of three ways:

- Normal construction projects requiring detailed reviews are “Taken In” and scheduled for review by each discipline, as needed, with a specific target date set for return.
- Small projects with limited scope and dollar cost may be reviewed as “Expedited”.
- Very small work scope projects that can be quickly reviewed within an hour, may be processed as “Over-the-Counter” reviews.

It is important to note that if the submittal is deemed incomplete, the project will be returned unreviewed.

It is highly encouraged by OSHPD that for projects with special concerns, conditions or complexity, the Registered Design Professional arrange for a presubmittal meeting with the Office to consult about the project's new work scope and the design

approach. This meeting is mandatory for projects of \$20 million or more, and of great benefit to the design team, as well as the owner, when the project or the existing conditions are difficult to make compliant, or known code issues exist.

## **B. General Organization of the Project Drawings**

Although every project may require different organization of drawings based on size and complexity, it is commonly found that construction documents have a similar organization, as follows:

### **Cover Sheet**

### **Project Title Sheet and General Information**

#### **Architectural Drawings**

- Plans for Fire and Life Safety Information
- Plans for Accessibility Compliance
- Site Plans
- Architectural Floor Plans
- Architectural Ceiling Plans
- Building Elevations and Sections
- Elevator and Stair Drawings
- Interior Elevations
- Door and Window Schedules and Details
- Interior Finish Schedule
- Interior Partition and Ceiling Details
- Radiation Shielding Plans

#### **Structural Drawings**

- Structural Design Criteria (General Notes) Drawings
- Structural Foundations Plan
- Primary Structural Framing Floor Plans
- Structural Frame Elevations
- Typical Structural Details
- Special Structural Details
- Medical Equipment Plans and Anchorage Details
- Special Seismic Certification Equipment Schedule

#### **Mechanical Drawings**

- Mechanical Duct Piping Layout Plans
- Equipment Schedules
- Riser and Control Diagrams
- Mechanical Details



### **Plumbing Drawings**

- Plumbing Fixture and Piping Layout Plans
- Fixture and Equipment Schedules
- Riser Diagrams for Supply, Vent and Waste Lines
- Plumbing Details

### **Electrical Drawings**

- Electrical Power Distribution and Fixture Layout Plans
- Fixture and Equipment Schedules
- One-Line Diagrams
- Electrical Details

### **Other Disciplines as Required for the Project**

## **C. Recommended Graphics and Symbols**

Although each set of drawings is a composite of drawings prepared by differing engineering disciplines, all drawings must maintain a level of graphic standards that are commonly used for the project, and conveys a level of coordination to the OSHPD reviewer. Common practice follows an approach that includes:

- All disciplines should use the same plans, orientation, and scale as the architectural plans.
- Numbering of drawing sheets should establish a common organization regardless of discipline.
- Where large projects require a separation of drawings into volumes, the organization of the set should be carefully arranged to allow reviewers to locate information easily. Indexes showing contents of each volume should be provided at the front of each volume of drawings.
- Where common elements are shown by different disciplines, or on enlarged or “typical” plans, great care must be taken to avoid conflicting information and redundancies that create confusion. The discipline having the greatest responsibility should provide the detailed information on their plans and other drawings should reference those plans.

Some information is needed to be reflected on all plan drawings to assist reviewers to assess compliance. This is particularly true for fire-rated partitions and other life-safety components that establish the compliance needs for mechanical and electrical work. It is highly recommended that all plans use common graphic, symbolic line work that identify the following:

- One-hour fire partitions for corridors.
- Rated walls for one, two, three, and four-hour occupancy separations.
- Smoke barrier walls for smoke compartments.

- Two-hour rated horizontal exit walls,
- One and two-hour enclosures for stairs and shafts.

Examples of recommended graphics for fire life-safety plans and base floor plans used by all disciplines are provided in an appendix to this section.

#### **D. General Nomenclature**

When developing the floor plans in the early stages of design, it may be appropriate to use terminology that comes from the hospital's staff, so all spaces required by the program may be accounted for in the schematic layouts. However, as the plans develop into construction documents, it is equally important that the room names and space designations reflect, as closely as possible, the code definitions provided in Title 24. The importance of this relates to conveying on the drawings both what the room functions are relative to the code, and asking those reviewing the drawings to locate and account for required functions being included in the hospital plan.

***Tip: Use of room and space nomenclature in the CBC will facilitate a more expeditious plan review.***

Definitions are located in Chapter 2 for each of the California Building Code, Mechanical Code, Plumbing Code, Fire Code, and Chapter 1, Article 100 of the California Electrical Code.

Some examples of common room names that can create confusion about occupancies include:

- Rooms that function as storage, but may be labeled "utility" or "supply".
- Rooms labeled as "Procedure," but do not define intended operations.
- Patient rooms labeled as "Step-down," or "Flexible," that do not fit code-defined uses.

Terminology related to egress and components of the means of egress are also subject to misunderstandings when not carefully coordinated with terms used in Chapter 10 of the CBC for Means of Egress. For example:

- Use of the terms "corridor," "hallway," or "hall," and "exit passageway".
- Proper descriptions for "exit," "exit passageway," and "exit discharge".

When providing information on fire-rated construction and components defined in Chapter 7 of the CBC for fire and smoke protection features, utilizing code-compliant language when describing the performance levels for walls and doors is key to understanding how the plans provide for life safety provisions of the code. For example:

- Correct applications for “fire partition,” “fire wall,” and “fire barrier”.
- Similarly, the proper use of “smoke partitions” and “smoke barriers”.

### 3.3 Project Title Sheet

#### A. Purpose

The title sheet to a set of construction documents not only provides a general introduction to the project but also includes statements and descriptions for project-specific requirements, the basis of design for construction, and compliance with enforceable and applicable codes relevant to the project. Much of the information on the title sheet is general information for the contractors and presents the project scope and description, maps for location of the building, identification of the responsible design professionals and client, and general statements about the overall use of the documents. For small projects, or where room allows, it may also include an index to the drawings, site plans, and other overall drawings that help to describe the project scope and its setting, whether for a new building or for renovation of an existing building.

**Tip:** *Project scope and description should be a clear statement describing the scope of the project and what is being done. This should not be just one sentence that leaves too much to the imagination.*

For reviewers of the drawings, the title sheet is also the preferred location for descriptions of building occupancy classifications, sizes, construction type, number of stories, and other general features of the design—all of which convey the designers’ intent and provide a basis of review for compliance.

For projects involving buildings or portions of buildings that are not under OSHPD jurisdiction, there should be a clear delineation of what portions of the project are being submitted for review. An example would be a utility project in which the building that houses the utility is subject to OSHPD review but the building to be serviced by the utility is subject to local government entity review.

#### B. Organization and Approach

The primary goal of the title sheet is to provide information in the clearest and most readable manner. The use of charts and outlines, simple descriptive phrases, and titled sections for each subject makes it easy for those who are not familiar with the project documents to find information relevant to their needs.

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Provide the proper name and address of the project, the facility, and the Registered Design Professional. Also provide OSHPD with the number or letter of each sheet, date of preparation and (if relevant) the date of revision, the scale, and the north point of reference. OSHPD strongly recommends that its project number, assigned at the time of application, be prominently noted on all sheets. The signed stamp of the Registered Design Professional and the signature of the architect or engineer in general responsible charge must be clearly shown. A space should also be reserved for the OSHPD approval stamp, provided at the time of signing. When a submittal package is part of an approved incremental construction package, the title sheet should identify the increment represented by the package and a list all increments that make up the complete project.

## **2) Project Team**

Provide the proper names of all firms responsible for the drawings and other design documents; include mailing addresses, phone numbers, and fax numbers for contact. Other contact information as shown on the application for plan review, such as names of individuals, e-mail addresses, and project websites, may be useful as determined by the Registered Design Professional in responsible charge. This information should match that provided in the Application for New Project.

## **3) Project Information**

Provide a general description of the work (e.g., new, renovation, or addition) as applicable for the project. Use the latest edition of the Remodel Code Application Notice (CAN) 2-102.6 for projects that include additions, alterations, or repairs. Include in table form and/or drawing format the following:

- The occupancy classification of the building or portions of the building, related to new work as well as existing buildings, in accordance with California Building Code (CBC) Chapter 3, and any specific use or occupancies in accordance with CBC Chapters 4 and 12.
- The date of construction of the original building (for addition and renovation projects) and building code under which building was originally designed.
- Whether the building is fully or partially sprinklered or unsprinklered. If partially sprinklered, show boundaries or parts that are sprinklered.
- The type of fire alarm system within the building (i.e., full or partial smoke detection, etc.).
- The area of the building and number of stories and/or new construction, by occupancy and construction types, with a description of allowable increases, in accordance with CBC Chapter 5.
- The construction type classifications in accordance with CBC Chapter 6 and Table 601.
- The Seismic Design Category of the building in accordance with CBC Chapter 16A (or reference to structural information).
- Reference to OSHPD approved Alternate Methods of Compliance, Alternate Means of Protection, or Program Flexibility, in accordance with CBC Section 104.11 and Section 1224.2 Exception 3.

## **4) Applicable Codes and Regulation**

List all codes and regulations that the project is required to meet in its construction, including the specific state and local regulations. OSHPD has particular interest in specific National Fire Protection Association (NFPA) Codes and Standards, including applicable editions, pertinent to the project. Refer to

CAN 1-0 - Enforceable Codes, for the current listing of enforceable codes and CBC Chapter 35 Reference Standards, for the current applicable editions of the NFPA Codes and Standards.

## 5) Fire-Resistive Schedule

Often it is necessary to defer the submission of some aspects of the building design until after the approval of the main design documents. A deferred submittal refers to a portion of construction that cannot be fully detailed on the approved plan because of variations in product design and manufacture. Such items include (but are not limited to) low-voltage electrical systems, elevators and other transportation systems, curtain wall systems, fire sprinklers, and oxygen and medical gas systems. OSHPD has the discretionary authority to allow the design of such systems to be reviewed as a deferred submittal.

OSHPD does not accept deferred submittals for primary gravity or lateral load resisting systems or stairways. All items being allowed by OSHPD to be submitted as deferred submittals should be listed on the project title sheet with numerical assignments for each system or construction component. An item that has all information available for design cannot be deferred. The engineering specialty specification should list the performance requirements that the contractor is required to meet in preparing the documents and define the requirements of the California-licensed engineer(s) who must be employed to prepare the documents for OSHPD review and approval. For design of structural work, a California-licensed structural engineer is required. The specification should describe in detail the process for submittal of documents to the design team for review prior to their being submitted to OSHPD for their review and approval. This specification section should also include a statement that the contractor shall not start any construction work on deferred items prior to OSHPD approval of the contractor's design documents.

*A deferred submittal refers to a portion of construction that cannot be fully detailed on the approved plan because of variations in product design and manufacture.*

Stamping and signing of deferred approval documents must comply with the same requirements as for construction documents, as noted in Section 7-115, and in addition 7-126 of the California Administrative Code.

**Tip:** *Deferred submittals should be minimized to the extent possible to avoid construction delays.*

## C. Other Information

Provide other general compliance information as appropriate for the project including, but not limited to:



- Plumbing fixture counts for public, staff, and patients, in accordance with the California Plumbing Code requirements.
- Project construction phasing of other work sequences that affect the project operations or impact code compliance.
- Other work not included in the project and carried out under other permits if it affects the project.
- Local zoning conditions of approval related to the project.
- Parking counts, as needed for local acceptance and Title 24 accessibility.
- A chemical inventory on small projects, if other than new construction and remodel projects that alter the existing structural frame (formerly referred to as “H” projects), to show compliance with number of control areas and maximum allowable quantities of hazardous materials as listed in CBC Tables 307.1(1) and 307.1(2) (see OSHPD PIN 8 for required information and suggested format).

It is recommended that a tabulation or matrix be provided for projects resulting in a change in the number of patient bedrooms, isolation rooms, operating rooms, dietetic storage and refrigeration, general storage, and perinatal unit space. Such a tabulation or matrix should include the number of existing items as well as the proposed items. Include a matrix of bed count and type.

#### **D. Existing Special Conditions**

Projects that include additions and/or renovations of existing spaces within OSHPD-approved buildings present additional challenges to providing required documentation for approval of the project. To assist the reviewer in understanding how the new work does not conflict with required levels of safety provided by the existing facility, in many cases the drawings will need to fully describe adjacent uses and occupancies, existing construction, and prior approvals and documentation. Buildings or structures outside the scope of work, but proximate to the scope of work, should be identified by size, area, height, and building and construction type.

Often this information is unavailable from old drawings but needs to be ascertained by field investigation and measurement. The title sheet can only outline the existing conditions, occupancies, and construction to inform the reviewer of information that is presented in more detail with the plans and other drawings. However, in the brief descriptions of existing facilities, use of the same code-matching terminology is particularly important, and, whenever possible, drawings from previous OSHPD-approved projects for the existing facility and related work should be listed and attached (and specifically called out as “reference only” drawings).

**Tip:** *Providing “reference only” documents of approved existing conditions can speed up the plan review process for renovations by reducing comments and the number of back checks.*

### 3.4 Fire and Life Safety Drawings

#### A. Purpose

The fire and life safety drawings are intended to depict the life safety code requirements and assist the OSHPD reviewer by providing a graphic view of fire and life safety compliance and egress compliance for the project. For new projects this will include identifying all components of the exit path and building features that provide fire protection and separation of individual occupancies. For renovation projects, these drawings will also include a description of existing exit paths, types and ratings of walls, and separations as well as indicate how the new work will maintain or modify the life safety requirements for compliance if applicable.

The drawings should include special graphic floor plans, coordinated with detailed information on the construction floor plans. For smaller projects, a combined drawing is acceptable.

**Tip:** Showing fire-resistance-rated walls on all architectural, mechanical, electrical, and deferred approval drawings will facilitate the plan review process [Forms, Applications & Reminder Lists](#).

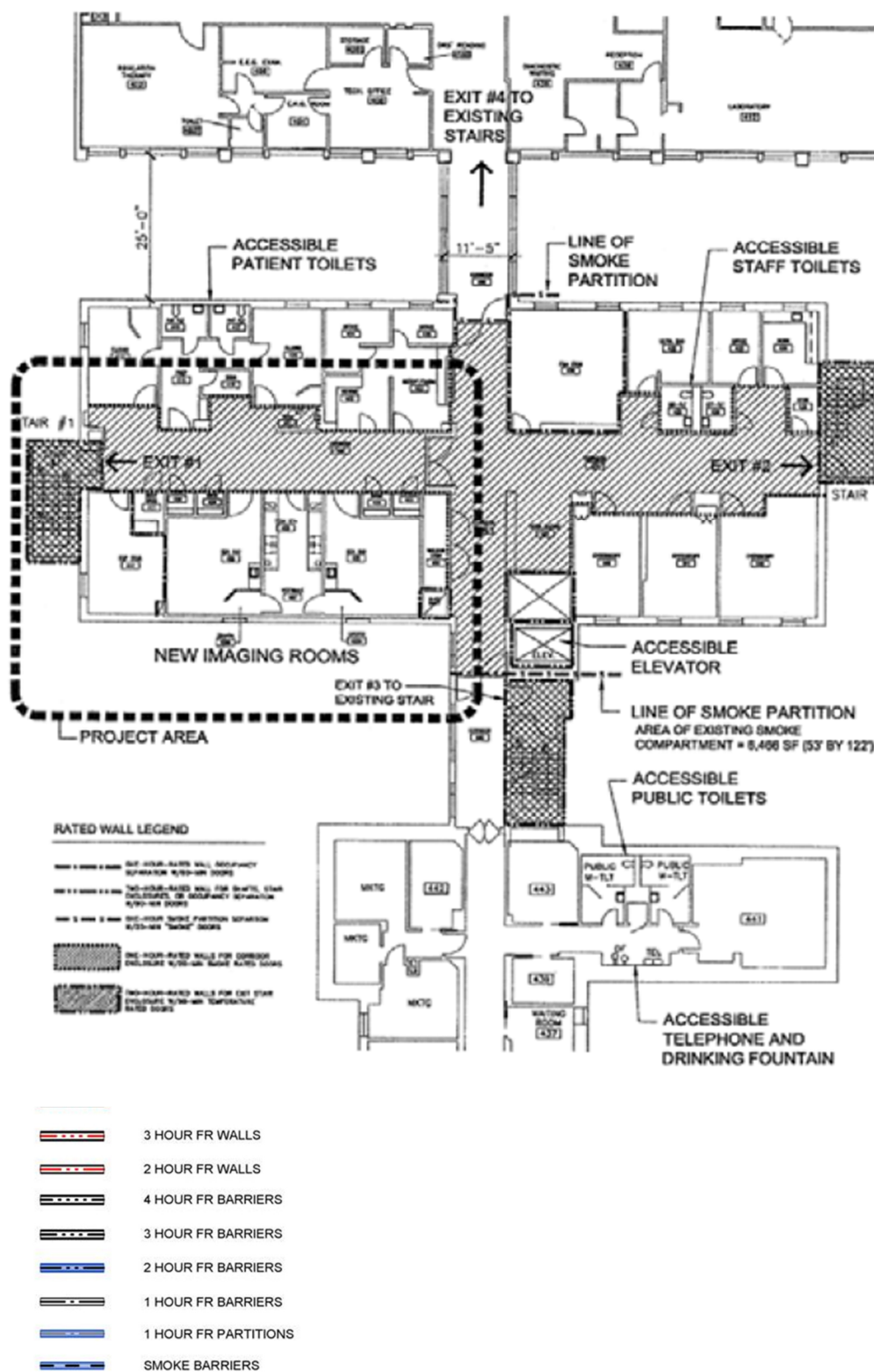
#### B. Organization and Approach

Floor plans specific to the fire life safety design should be provided, except in very small or simple projects, where information may be combined. All floor levels must be shown for new construction, even if they do not have an occupancy classification (e.g., roofs). The scale of the floor plans will depend on the building size and should ensure that all information is legible. Smaller remodel projects need only show the affected floor(s).

Site plans are also recommended, even for small renovation projects, to assist in describing the context of the project and the compliance of the existing building to basic site requirements.

Building sections are usually needed when separation of occupancies are present between floors, when the floors of the building do not stack, or when the site slopes significantly. Another reason to include building sections is because the maximum allowed building heights in some occupancies may need to be shown. Building sections are required for new construction.





General notes are recommended to provide reference to other areas of the documents that provide additional fire life safety design and details needed for showing compliance. The following notes are recommended and must be coordinated with the project's actual scope and organization:

- The fire rating of the fire-resistance rated assemblies is shown diagrammatically.
- For construction of partitions, see floor plans and fire-resistance rated assemblies construction drawings.
- These plans do not attempt to show all fire-resistance rated ceilings and/ or horizontal partitions (such as bottom of shafts, for example) present in the building. See reflected ceiling plans and enlarged stairs and elevator drawings for conditions not shown here.
- For location and type of exit signs, see electrical drawings and specifications.
- For location and type of fire dampers, see mechanical drawings and specifications.
- For location and type of rated access panels in walls, see floor plans, plumbing drawings, and plumbing specifications.
- For location and type of fire-resistance rated ceiling assemblies, see reflected ceiling plans.
- For location of sprinkler system elements, see reflected ceiling plans and plumbing drawings.
- For location of smoke detectors and other fire alarm devices, see electrical drawings or fire alarm drawings.
- For security devices, see security drawings.
- Unoccupied rooms must be designated for use by the design professionals, even if they are used for storage (e.g., clean utility, linen, medications, equipment, housekeeping, etc.); they may need to be constructed with a one-hour fire barriers if they are in excess of 100 square feet. Similar one-hour fire barriers may be needed for mechanical, electrical and tele/data (IT) rooms per the code.
- Typical checklist issues for the fire life safety officers should include the following:
  - Head of wall details that provide 100% Class II movement.
  - Resolution of the “T” rating requirement for through-slab penetrations such as floor sinks, floor drains, piping not contained within walls, etc.
  - Resolution of the “L” rating requirement for joint systems in smoke barriers and perimeter fire containment systems.
  - Treatment of listed floor slab assemblies that use rebar in lieu of wire mesh.
  - Fire resistance rated details for edge of slab that match the listing.
  - Doors that must open 180° because they open into an 8-foot corridor.

A Fire and Life Safety Quality Assurance checklist can be found on the website.  
[FLS Quality Assurance 2022 CBSC \(Rev 03.02.2023\)](#).

## **C. Drawing Content**

Depending on the size and complexity of the project, the information provided on the fire and life safety drawings should provide a clear description of how the project complies with the various provisions of the CBC. Some of the general information for the project may also appear on the drawing title sheet. Also, much of the specific information will be contained in the body of drawing details and schedules. It is not necessary to provide redundant information, but it is important to provide information that describes the basis of life safety design and to coordinate the drawings in a manner that is clear and complete. The following outlines the information that should be covered on the fire and life safety drawings by CBC chapters.

### **1) Provisions of CBC Chapter 3: Use and Occupancy Classification**

Include the following information:

- Occupancy groups of building and spaces within building.
- Separation of occupancies locations and ratings.
- Special provisions based on occupancy group, including construction, height, and areas.
- Smoke compartment locations, square footage area, and calculations of areas of refuge as required for “I” occupancies.
- Location of building on property, property lines, assumed property lines and adjacent buildings.
- Required components of fire sprinkler and standpipe systems.
- Required features of fire alarm and smoke detection systems.
- Required components of egress signage.
- Locations of and requirements for special hazards or hazardous materials that affect the occupancy classifications.

### **2) Provisions of CBC Chapter 4: Special Detailed Requirements Based on Use and Occupancy**

Include the following information:

- Requirements for atriums (when part of design) including:
  - Components of smoke control system, including how designed smoke control for the atrium is maintained when projects are not in the atrium but include HVAC or passive smoke control work that can affect the original design of the atrium smoke control system.

- Separation of atrium from other spaces, and
  - Means of egress from and through atrium.
- Special requirements for high-rise buildings and hospital buildings over 75 feet tall including:
  - Fire department access locations.
  - Special alarm and communication features.
  - Location and components of central control station.
  - Special features of elevator design.
  - Special provisions for egress stairways including stairwell and vestibule.
- Special requirements for Group I-2:
  - Special provisions for hospital corridors, waiting areas nurses' stations and gift shops.
  - Special provisions for mental health treatment area.
  - Special requirements for corridor walls and corridor doors in hospitals.
  - Special requirements for smoke barriers and smoke compartments in hospitals.
  - Special provisions for automatic sprinkler systems in 24-hour care facilities.
  - Special provisions for secured yards.
  - Provisions regulating special hazards.

### **3) Provisions of CBC Chapter 5: General Building Heights and Areas**

Include the following information:

- Requirements for building location on property, including exterior wall fire resistance, wall openings, and courtyard requirements.
- Calculation of new building areas, or existing-plus-new areas, compared with allowable areas, including allowable increases.
- Design heights of building(s) compared with maximum allowable height, including allowable increases.
- Requirements for mezzanine spaces.
- Description of fire-resistive substitutions, when applicable.
- Location of separation walls and area calculations for separations.

#### **4) Provisions of CBC Chapter 6: Types of Construction**

Drawings should include requirements for fire-resistive construction of building, exterior walls, interior exit stairs, frontage of side yards, and separations for fire rating of existing walls and openings. Drawings should include the location of combustible materials in Type I and Type II construction.

#### **5) Provisions of CBC Chapter 7: Fire and Smoke Protection Features**

Drawings should include details of fire resistance requirements for the following:

- Provisions for fire-resistance ratings of structural members exterior walls, fire walls and fire barriers.
- Location and construction of shaft enclosures.
- Provisions for the fire-resistance ratings of fire barriers, fire partitions, smoke barriers, smoke partitions and horizontal assemblies.
- Provisions for the fire-resistance protection of penetrations and fire-resistant joint systems.
- Details and locations of opening protective, ducts and air transfer openings.
- Provisions for fire blocking and draft stopping concealed spaces.
- References to the prescriptive fire-resistance tables in the CBC, fire tests from approved laboratories or fire resistance calculations.

#### **6) Provisions of CBC Chapter 8: Interior Finishes**

Drawings should include details of interior finish requirements for the following:

- The flame spread and smoke development performance of wall and ceiling finishes.
- The classification of interior floor finish materials.
- The location of combustible material in Type I and Type II construction.
- The location and flame spread, smoke development and fire retardant performance of decorative materials and trim.
- The fire-resistance, flame spread and smoke development performance of acoustical ceiling systems.

#### **7) Provisions of CBC Chapter 9: Fire Protection Systems**

Drawings should include details of requirements for fire protection systems including the following:

- Provisions for the installation of automatic sprinkler systems.
- Requirements for the installation of alternative automatic fire-extinguishing systems.

- Provisions for the installation of standpipe systems.
- Details of locations of portable fire extinguishers.
- Provisions for the installation of fire alarm, detection, emergency alarm systems and smoke control systems.
- Requirements for fire command center in a hospital building over 75' tall.
- Requirements for the location of fire department connections.

## **8) Provisions of CBC Chapter 10: Means of Egress**

Include the following information:

- Identification of occupant loads and means of egress.
- Calculation of means of egress widths and required widths.
- Means of egress identification: identify security barriers (e.g., locked doors) that may intervene in the path of travel and explain how they work to allow for free exiting in case of an emergency.
- Location of doors and directions of door swings.
- Locations of exit stairways and ramps.
- Maximum exit travel distances.
- Indications for minimum separation for two or more exits.
- Calculations for horizontal exit refuge areas as required by CBC Chapter 10.
- General indication of ratings for means of egress elements, including:
  - Corridors.
  - Exit stairway enclosures.
  - Stairway vestibules (for high-rise requirements).
  - Exit passageways.
  - Horizontal exits.

## **9) Provisions of California Fire Code and NFPA Standards**

The following information requires the review and approval of the local fire authority:

- Location of fire hose cabinets and connections.
- Location of fire hydrants and fire department connections (FDCs).
- Location and configuration of fire department access.
- Means for emergency entry for fire department access to stairs of buildings four or more stories in height.

- Location and configuration of fire department alarm and/or notification panels (and subpanels where used).
- Designation of remote station location other than a public fire communication center or similar governmental agency.
- Designation of primary and alternate floor levels for elevator recall.
- Location of temporary walls needed to separate the occupied spaces from the construction zone to show how this will affect exiting and exiting width within the occupied areas of the building during construction.
- Location of key box(es), when used.
- Location of flammable liquid and LPG storage tanks.
- Location and configuration of fire command center.
- Configuration of Emergency responder radio system.
- Provisions for removal of occupants from locked facilities and safe dispersal areas.
- More restrictive requirements adopted by local ordinance.

#### D. Working with the Local Fire Authority

OSHPD reviews fire sprinkler and standpipe installations, for compliance with the minimum requirements of NFPA Standard No. 13, NFPA Standard No. 14, and NFPA Standard No. 24. OSHPD does not review projects for compliance with local fire flow, hydrant spacing, connection and control valve configuration, or location requirements. Review and approval by the local fire authority will be requested prior to final plan approval of the project. Local approval should be provided on forms available from OSHPD. [Local Fire Authority Approval Checklist](#)

**Tip:** Provide drawings that document the locations and details showing compliance to California Fire Code and NFPA requirements.

##### 1) Local Fire Authority Fire Sprinkler and Fire Hydrant Requirements

- The location of the Fire Department Connection (FDC) must be in accordance with NFPA Standard No. 24 and California Fire Code, Section 912.
- The location and type of system control valve(s) must be in accordance with NFPA Standard No. 13.
- Fire flow and hydrant spacing must be in accordance with the requirements of NFPA Standard No. 24 (for new construction only).



## 2) Local Fire and Water Authority Requirements

The installation, location, and configuration of the cross-connection control device (detector check) must be in accordance with the requirements of the California Fire Code and the California Plumbing Code.

## 3) Local Fire Authority Approval

The fire flow, hydrant spacing, FDC, and location and type of control valves must be in accordance with the requirements of the statutory fire authority.

OSHPD reviews fire sprinkler installations for compliance with NFPA standards in accordance with CBC and CFC. In addition to the specific requirements of the NFPA standards, the location, configuration, and arrangement of fire mains, hydrants, FDCs, and control valves depend on site-specific conditions and the requirements of the local fire authority. To facilitate the review and approval process, the following performance standards should be considered when designing and preparing a fire sprinkler system for submittal:

- The FDC should be visible, accessible, and installed on the address side of the building.
- The FDC should be located at the public street as close to the curb face as possible. The distance from the FDC to the curb face should not exceed 25 feet.
- The FDC should be located within 150 feet of a public fire hydrant.
- The FDC should be located a minimum of 25 feet from the building. When this distance cannot be provided, a minimum two-hour fire-resistive wall should be provided.
- Each fire sprinkler system should have a main post indicator valve located at the public water valve connection.
- Each fire sprinkler riser should have an exterior control valve located above grade.
- The local water purveyor should be contacted for requirements pertaining to the installation of cross-connection backflow control devices (detector checks).
- The local fire jurisdiction should be contacted for requirements pertaining to fire flow and hydrant spacing. Requirements pertaining to fire flow, hydrant spacing, types of control valves, and the location of valves and connections vary from jurisdiction to jurisdiction and from facility to facility within each jurisdiction.

**Tip:** Adherence with the performance standards enumerated here does not necessarily assure compliance with local requirements. Documentation of local fire authority approval must be submitted to OSHPD prior to OSHPD approval.



## E. Existing Special Conditions

The same information required for new project areas is also required for existing areas that are not part of the construction scope, when those areas are adjacent and/or may be affected by the new work. The life safety drawings then provide a complete picture of the building, with the new work incorporated, that demonstrates compliance to all code requirements.

## 3.5 Accessibility Compliance Documentation

### A. Purpose

OSHPD reviews design conformance with CBC Chapter 11B for accessibility requirements. There are differences between this code and the Americans with Disabilities Act Standards for Accessible Design (ADA Design Standards). The design professional is required to provide compliance to both the CBC and the ADA Design Standards. The owner is accountable for compliance to both the ADA and the CBC accessibility requirements.

Drawings describing accessibility requirements provide the OSHPD reviewer with information that shows compliance to the provisions of CBC Chapter 11B, as well as other related requirements applied to the project from federal and local agencies.

### B. Organization and Approach

It is the responsibility of the architect to design a project to code. It is the responsibility of the contractor to build to code. The design professional should show the code-required clearances on the drawings. Additionally, the contract documents should show the actual project dimensions, not merely code-required minimum, or maximum dimensions. It should also be noted that normal construction tolerances may affect required dimensions for accessibility.

**Tip:** Take construction tolerances into account when specifying absolute dimensions.

Findings of equivalent facilitation by OSHPD for accessibility issues should be included in the drawings and should indicate where and how the equivalent facilitation is provided.

### C. Drawing Content

Accessibility compliance review does not require the architect to prepare drawings dedicated to the topic. Instead, information may be dispersed throughout the set of architectural drawings. However, it is recommended to add a note to the general notations explaining where in the set the reviewer can find the information.

## 1) Site Plans

For new buildings, all entrances and exterior ground-floor exit doors shall be made accessible to persons with disabilities. Accessible parking and other site accessibility requirements, such as accessible routes to public transportation stops, accessible routes between other buildings on the site, etc., are subject to OSHPD review as noted in CAN 2-0, OSHPD Jurisdiction.

**Tip:** Refer to CAN 2- 11B – Accessibility in Health Facilities, for application of CBC accessibility requirements to hospital projects.

## 2) Floor Plans

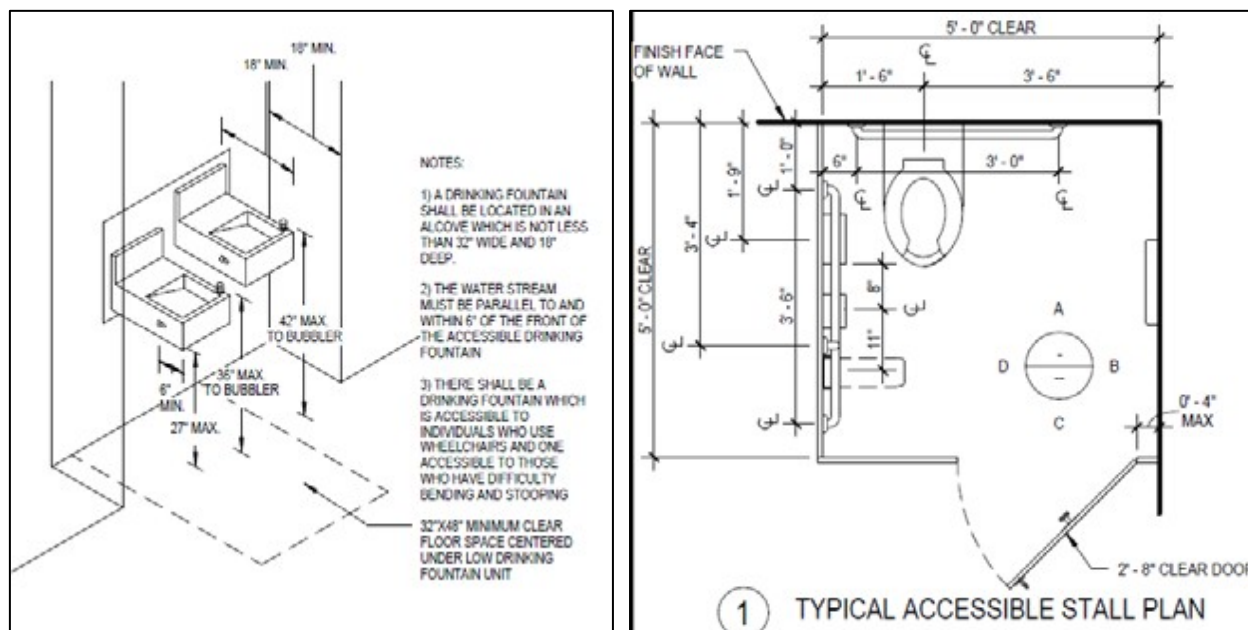
Include information on the accessible path of travel throughout the facility or remodel project. If an area is not accessible, explain which one and why it is not accessible (e.g., mechanical penthouse—no accessibility required by code):

- Enlarged drawings to illustrate toilet accessibility are recommended but are not absolutely necessary, especially if a typical mounting heights sheet is being used.
- Label toilets by user group as “Patient,” “Staff,” or “Public,” and indicate which serve the remodeled area on remodel projects as applicable.
- On remodel projects show a small-scale plan of the whole facility with a clear designation of the remodeled area and show the accessible path of travel to it from the entrance into the building.
- On remodel projects show the location of all existing and new toilets, drinking fountains, and public telephones serving the remodeled area and indicate if they are accessible or not.
- Code-required signage must be described and located on drawings and/or specifications; this includes signage for stairs, elevators, evacuation, toilets, maximum occupancy, assistive listening, hazards, and accessible entrances.



Provide enlarged drawings for toilets and bathrooms, stairs, elevators, special public and “stall” areas (e.g., reception desks, waiting rooms, and lockers), and patient bedrooms. At a minimum, enlarged drawings should be twice the size of general floor plans.

**Tip:** Also include interior elevations of such spaces alongside of the enlarged plans to help explain how requirements for vertical dimensions are complied with.



## D. Existing Conditions

New additions and renovations to existing buildings may need additional information for accessibility that goes beyond the immediate scope of the project. This information may include the location of accessible toilets that serve the new addition or area of renovation and details of existing elevators, ramps, and stairways that provide access to the new addition or area of renovation.

## 3.6 Door Schedule

### A. Purpose

The door schedule provides the essential information for the reviewers to determine compliance with required egress widths and rated assemblies, as well as detailed information for the contractors to coordinate the construction of walls, finishes, and hardware.

### B. Organization and Approach

Traditionally, there are several ways to document door information. One way includes providing width and ratings information directly on the plans; another includes referencing the door to a schedule or spreadsheet that lists all the pertinent information for the door types and hardware.

**Tip:** Except in the smallest or simplest of projects, it is recommended that a schedule format be used.

OPENING NO.	RATING	OPENING SIZE	DOOR			FRAME			HDWRE GROUP NO.	NOTES
			TYPE	MAT.	GLASS	TYPE	MAT.	DTL.		
100A	20S	4-0"x7'-0"	A1	WD	-	F1	HM	12/A9.2	36	CARD READER
101A	60M	PR 4-0"x7'-0"	A3	WD	GL-1	F5	HM	23/A9.2	20	
101B	-	3-0"x7'0"	B1	HM	-	H2	HM	15/A9/2	17	

## C. Drawing Content

The door schedule must provide as its basic information the rating of the door and frame assembly commensurate with the wall rating and the door's function. The function of the wall rating may be part of a one- hour corridor, a two-hour stair or exit passageway enclosure, a one-hour smoke compartment wall, or a rated occupancy separation wall. Rating requirements for openings in each of these wall conditions are provided in various sections of the CBC.

In addition to the door rating in minutes (e.g., 20, 45, 60, or 90 min), the schedule must indicate for the reviewer whether the door is required to be "tight-fitting smoke- and draft-control assemblies" typically with an "S" designation (e.g., 20S, 60S, etc.). Some doors may also be required to have a specified temperature rating, using a "T" designation in the door schedule. Other door features that may be indicated in the door schedule for the reviewer's information include required door hardware such as panic devices, closers, view windows, etc.

The required width of the door is determined both by the occupant load assigned to pass through the door for exiting and by the specific requirements of its location within the hospital. Every means of egress door's minimum required opening width is identified in CBC Section 1010.1.1 as "sufficient for the occupant load thereof and shall provide a clear width of 32 inches" and "the maximum width of a swinging door shall be 48" nominal." CBC Section 1005.3 provides multipliers for determining the egress capacities of doors based on occupant loads. Hardware features and gap clearances for The Joint Commission should be incorporated.

Required widths based on "I" occupancies indicated in CBC Section 1010.1.1 states, "In group I-2, doors serving as means of egress doors where used for the movement of beds and stretcher patients shall provide a minimum clear opening width of 44 inches." Given that the "clear" width at doors is measured inside the door stops, the 44-inch requirement is typically accommodated by 4-foot door leafs. Non-patient areas may use a standard 3-foot door leaf; however, it should be carefully noted

Architectural floor plan of the second floor, showing various rooms, corridors, and service areas. The plan includes room numbers, names, and areas in square feet. Key areas include:

- CONSULT 4167 (100 SF)
- CONSULT/READING, CATH 4168 (112 SF)
- WORKROOM, STAFF 4174 (87 SF)
- NURSE STATION 4173 (141 SF)
- OFFICE, MANAGER, GI 4160 (96 SF)
- OFFICE, MANAGER, IES 4159
- EXAM, CARDIOVERSION 4171 (145 SF)
- HALLWAY 4162 (268 SF)
- Corridors: 4016 (163 SF), 4015 (221 SF), 4012 (547 SF)
- Service areas: MDU, HSK, ZVB, MV, MA, O2
- Dimensions and clearances are indicated throughout the plan.

Existing exit pathways, opening ratings, or other projects that include modifications to existing conditions should include information on both new and existing doors where such information is needed to describe the maintenance of door functions required by the design. The architect or engineer must verify with OSHPD that projects requiring construction of temporary walls and doors to separate construction from occupied spaces meet the same requirements as permanent construction when providing protection for exit corridors, occupancy separations, and other rated conditions.



### 3.7 Equipment Anchorage

#### A. Purpose

Permanent equipment (Fixed or Moveable) and other manufactured items used in the operation of the building are required to be anchored to the floor, wall, or roof construction. The anchorage shall be designed for gravity, seismic, wind, and other forces and displacements as required by the CBC based on the equipment classification and support locations. The primary considerations are position retention, structural integrity and functionality of the equipment and components when subjected to design level earthquake forces. Equipment within the building must resist forces caused by a seismic event, which vary based on equipment location in the building. These forces must be delivered to elements of the building structure capable of resisting them.

Although all permanent components, equipment, and elements of the structure must be anchored, the anchorage of some items need not be designed and detailed on the approved drawings. Chapter 16A, of the CBC provides exemptions as follows:

- Furniture except storage cabinets as noted in Table 13.5-1.
- Temporary or mobile equipment (although restraints for heavy equipment and equipment with utility connections may be required).
- Architectural, mechanical and electrical components in Seismic Design Categories D, E, or F where all of the following apply:
  - The component is positively attached to the structure.
  - Flexible connections are provided between the component and associated ductwork, piping and conduit; and either:
    - The component weighs 400 pounds or less and has a center of mass located 4 feet or less above the adjacent floor or roof level that directly support the component or,
    - The component weighs 20 pounds or less or, in the case of a distributed system, 5 lbs./ft. or less.

In many instances the information needed to provide details for specific products may be lacking in a project. Sometimes, with OSHPD acceptance, equipment anchorage may be submitted as a deferred submittal. However, it is generally more desirable to submit all equipment with the initial submission documents than to separate the equipment details, to avoid delays in approval that might affect construction. This means that design decisions must be made in advance to allow the details to be completed, and as selections and procurement dictate changes, changes submitted to OSHPD as an Amended Construction Document must be issued for each final installation. Many equipment manufacturers have their equipment's supports and attachments preapproved by OSHPD through the OSHPD Preapproval of Manufacturer's Certification (OPM). Use of OPMs in your project is recommended. In addition to seismic anchorage, the CBC Chapter 17A requires

This technical diagram illustrates a modular building system with various components and their connections. The main structure is a horizontal base with a series of vertical supports. Components are shown as rectangular blocks that can be attached to the structure. The diagram includes several callouts and labels:

- Component**: Points to the rectangular building modules.
- Attachment**: Points to the mechanical connections between components and the structure.
- Support**: Points to the vertical structural elements that hold up the components.
- Housekeeping pad integral with the structure**: Points to a specific feature on the left side of the main structure.
- Structure**: Points to the main horizontal base of the system.
- Component (pipe)**: Points to a vertical pipe-like component on the right side.

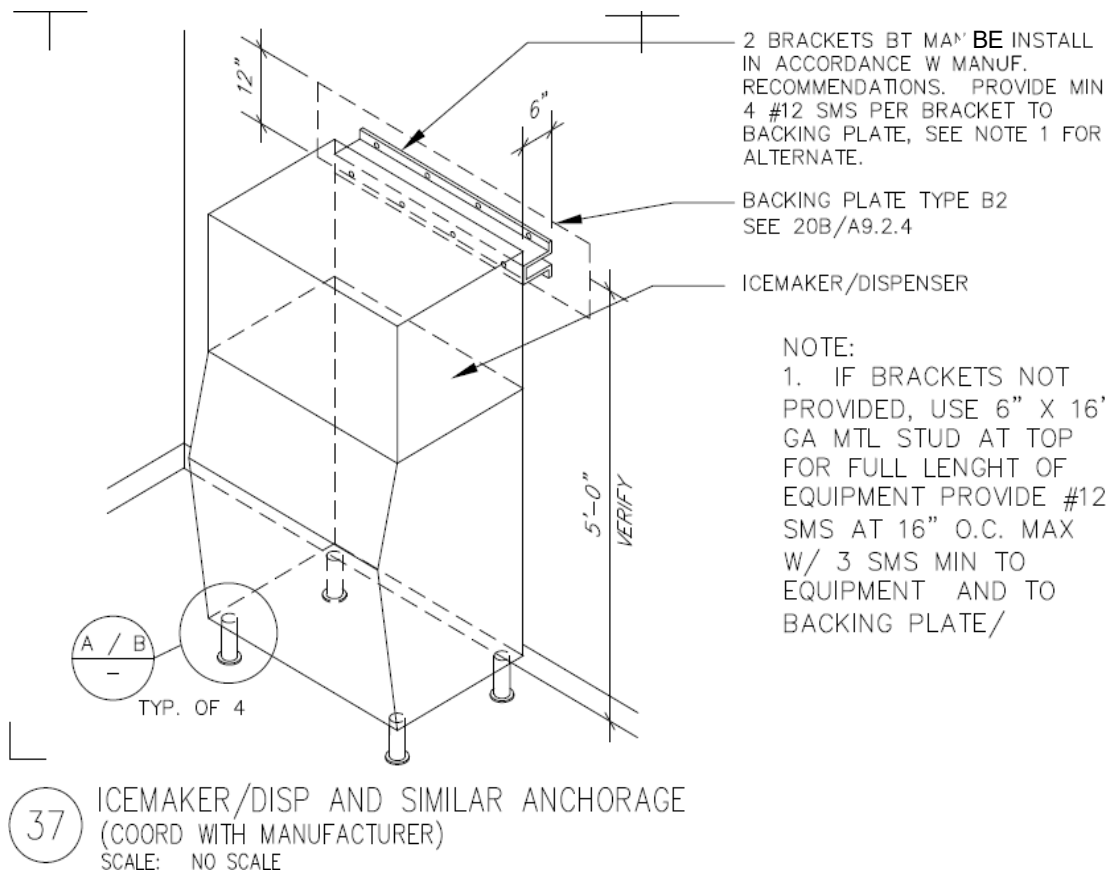
The diagram shows how these components are interconnected using various attachment methods and supported by a robust structural system.

On small projects the amount of equipment and anchorage details may be limited enough for direct reference of plan-noted equipment to the detail drawings. On larger or more complex projects, it is recommended that significant equipment be listed in a table or chart with detail references, equipment descriptions, and OSHPD preapproval numbers provided for each appropriate item. The sample equipment schedule below that shows the minimum amount of information needed for review.

Since anchorage details are specific to products, a numbering system, either provided by the owner or created for the project, is important for tracking equipment and changes throughout the construction. When any object needs to be bolted to the floor, the owner should be asking questions about cleaning, maintenance access, etc.



EQUIPMENT SCHEDULE									
EQUIP NO.	DESCRIP-TION	MANUF.	ATTACHED TO	EQUIPMENT PROPERTIES				DETAIL NO.	OSHPD PRE-APPROVAL
				WT	W	D	H		



## C. Drawing Content

Equipment may include medical, mechanical, plumbing, electrical, food service, or accessory items such as shelving and appliances. Equipment may be installed by the contractor, the owner, or special vendors. Regardless of who performs the installation, for the purposes of construction, all items need information on the drawings to describe their installation. Anchorage of standard items, such as ceilings and casework, is best covered in the drawings by typical details. These may include typical backing-plate requirements for wall framing and clip attachments to walls, counters, and floors for miscellaneous items found throughout the project in toilets, kitchens, treatment and exam rooms, etc. Drawings may also cover the anchorage of items exempt from plan review (discussed in the preceding section). However, such details are subject to plan review, and changes from the approved drawings may generate a post approval document review.

For those pieces of equipment that exceed the criteria for exemptions, specific details designed by the EOR or provided by the manufacturer's (California-registered) engineer are required on the drawings. Some manufacturers have engineered anchorage systems that have been submitted to OSHPD under its OPM Program

*Some manufacturers have engineered anchorage systems that have been submitted to OSHPD under its OPM Program for manufactured equipment. Preapproval is for the adequacy of the supports and attachments only and does not include product approval.*

for manufactured equipment. Preapproval is for the adequacy of the supports and attachments only and does not include product approval. This program allows the use of preapproved drawings for equipment anchorage, in most cases, to show just the preapproval number. However, in some cases, the actual details submitted by the manufacturer should be reproduced on the drawings for the reviewer to verify that the anchorage design is correctly applied to the project. The list of OSHPD preapproval of manufacturer's certification for equipment is maintained by OSHPD and provided on its website for use by design professionals. If a preapproved product or system is specified, it is vital that the design team review the actual preapproval documents to confirm that they conform to the project requirements.

The acceptability of proprietary fastening systems should be as specified in the CBC.

When equipment cannot be specified at the time of submittal, the design team may request that the item be deferred. Deferred items are to be listed in a schedule on the cover sheet of the drawings. However, assumptions should be made for equipment weights, location, and utility connections to allow the reviewers to check related items (such as the supporting structural framing) and to permit tracking of follow-up Amended Construction Documents for anchorage details.

The drawings and specifications must fully describe the performance and loading criteria for the deferred item.

### 3.8 Architectural Details

#### A. Purpose

Details developed by the Registered Design Professional are intended to convey construction requirements to the contractors which, when properly constructed, complete the design intent as well as meet the code requirements for structural integrity and life-safety. While it is not possible to provide details that reflect every possible condition of the construction, it is desirable to provide enough details, typical to the various conditions of the project, which establish the minimum construction standards.

**Tip:** *Follow current industry standards when developing these details.*

For interior partition construction and gypsum ceilings, such standards may include:

- CBC, Table 720.1(2).
- Gypsum Association, Fire Resistive Design Manual.
- Leading manufacturers of Gypsum and Metal Stud Products.
- Metal Stud Manufacturers' Association (SSMA).
- Designs tested and published by an approved testing agency (UL, Intertek, Omega Point, etc.).

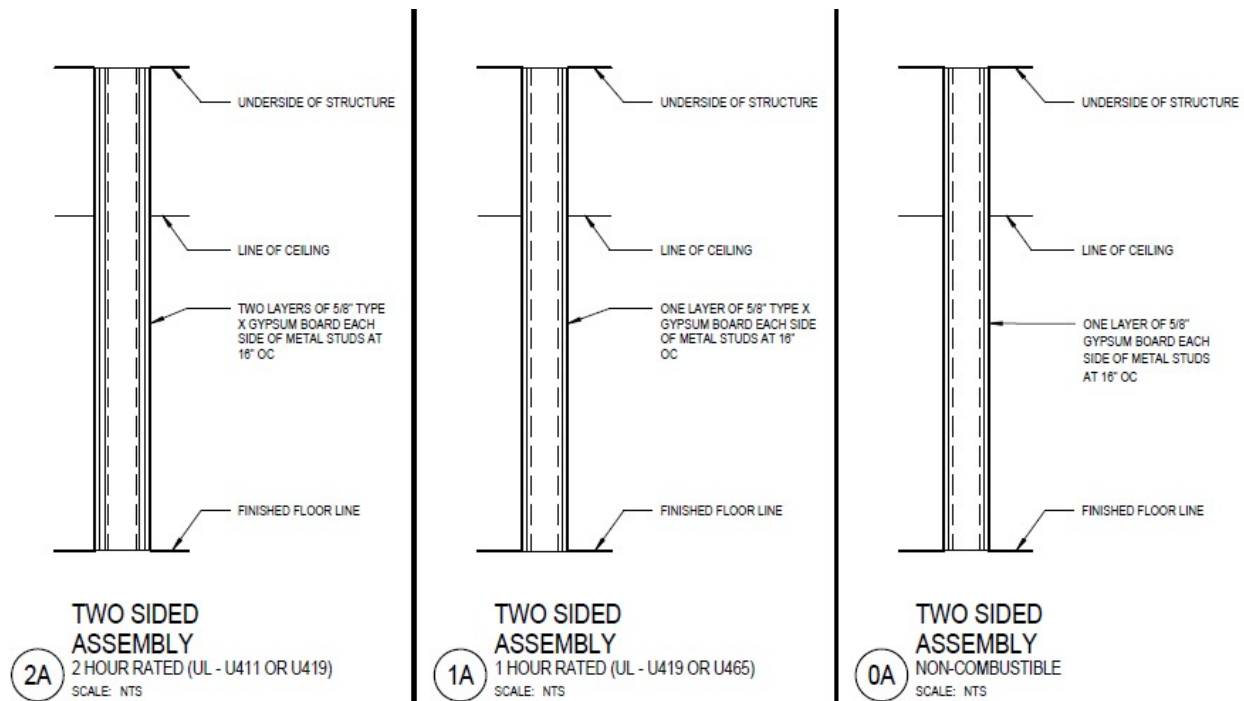
**Tip:** *To further assist in the correct application of interior details for partitions and ceiling construction, OSHPD has established a program of developing preapproved details which will provide the Registered Design Professional a library of details that, when properly used, meet the requirements of California Building Code.*

**Tip:** *For small projects that may be categorized as "Field Review," "Exempt," or "Expedited Review," additional information is provided in the FREER Manual, which provides design criteria for various, minor non-structural work, which a hospital may undertake.*

#### B. Organization and Approach

Architectural interior details should be organized, as much as possible, based on subject matter, such as details for structural design, details for fire-resistive construction, and details for non-rated architectural finishes, etc. It is important to provide adequate references on the plans or in notes to assist in locating the proper details.

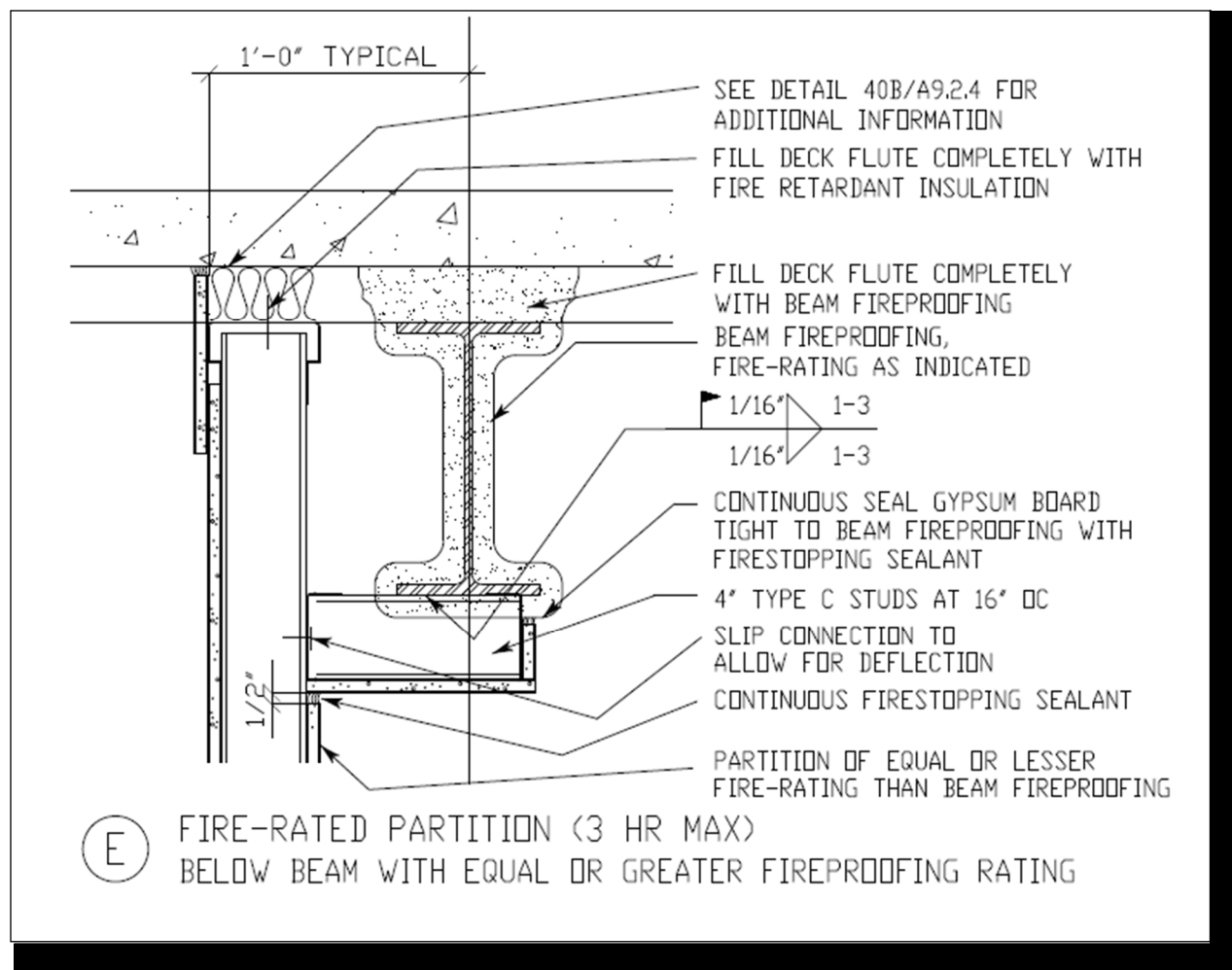
General application details may be more appropriate un-referenced on the plans, however, it should be clear where these details apply. Where common standard details are provided for interior partitions, they may be organized in a schedule-type format to allow “tagging” of walls shown on the plans, which reference the various typical construction details. These details may cover required rated construction, acoustical requirements, and typical common construction of chase walls, shaft walls, and walls with radiation shielding. Where fire-resistive partition details are provided, the correct UL, or other testing agency, number must be provided to show compliance to the intended rating.



### C. Drawing Content

For details that provide information on structural connectors, proper sizing of connectors must be supported by engineering calculations and industry- assigned values, according to the loading on the connection and the seismic design category of the project. Component identification should also conform to industry nomenclature for structural shapes, sizes and weights—such as the standard designation of studs provided by the SSMA.

OSHPD has initiated a Standard Details program, which provides typical details which may be used by the design professional. OSHPD Preapproved Details (OPDs) are available from the website for use by the Registered Design Professional. The responsibility for the proper use and application of these details remains with the responsible design professional.



Details that provide information on tested rated assemblies should, similarly, adhere to the details provided by the test documentation, either by Underwriters Laboratories (UL), or other approved agencies.

**Tip:** For fire-resistive construction provide the construction detail with the identifying Underwriters Laboratories (UL) number.

Where project conditions require a variation to the tested details, an “engineering judgment” may need to be made by a qualified representative of the manufacturer, a registered professional engineer, fire protection engineer or an approved independent testing agency, and should be incorporated into the approved drawings.

## 3.9 Guidelines for Structural Drawings

### A. General Guidelines

The structural engineer, as a member of the design team has the primary role of developing the structural system necessary to meet the needs of the architectural design as well as the code required performance of the gravity and lateral (seismic, wind, etc.) systems, dictated by seismic design category and the site specific conditions. Most project designs start with the analysis of the site conditions (geotechnical issues, geologic hazard, flood, etc.) and the selection of the primary structural systems, which will determine the framework of the building, and support all architectural and MEP systems.

Although much of the structural engineer's work is determined by the site conditions and code design requirements for lateral (seismic, wind, thermal, flood, etc.) and gravity loads, the key to the success of the design process is a high degree of coordination with mechanical, HVAC and piping as well as the architectural systems of the exterior cladding and interior partitioning. It is essential that the structure engineer have early involvement in the planning process and contribute to the design team solutions to the building that respond to code and inform the architect and MEP engineers what considerations need to be made in developing their designs. Early activities may include:

- Compile site-specific conditions as early as possible (such as, existing buildings, survey of grades, geo-hazard and geotechnical reports).
- Identify important project objectives (such as open spaces, long spans, floor plan flexibility).
- Develop structural schematic design alternatives based on early planning, site conditions, and project objectives.
- Select optimum design alternative and validate major structural systems using approximate analytical methods.
- Establish, quantify, and validate all sources of structural loading.
- Identify all conditions requiring alternate design procedures and/or special testing of structural elements.
- Coordination with ALL design disciplines for structural member penetrations, depths, support, bracing, anchorage, and other structural considerations.
- Establish all elements of the designated seismic system.
- Define structural engineering design requirements for building system components (non-structural).

## **B. Working with OSHPD Structural**

Early in the design process, it is also essential to start communicating with OSHPD staff to identify any special issues and approaches necessary for the structural design to consider when developing the basis of design for lateral and gravity systems. For larger, new hospital projects, this might occur at a general kick-off meeting with OSHPD review staff to introduce the project and nature of the structural systems. For smaller projects, or renovations of existing hospitals, this might be a short meeting with structural reviewers to review special aspects of the project which have structural issues.

- Identify all conditions requiring alternate design procedures and/or special testing of structural or nonstructural elements.
- Identify and validate design methodologies with OSHPD for structures with special design considerations.

As the building design progresses and structural documents are developed in coordination with the Architect and MEP Engineers, the Structural Engineer should be considering the following:

- Complete analysis and design of major structural systems, members, and connections.
- Complete analysis and design of nonstructural systems including: exterior cladding, interior partitions and ceiling systems, distribution systems and equipment anchorage.
- Identify, map, and analytically validate all building load paths.
- Establish all member and connection capacities.
- Establish an appropriate analysis and design methodology.
- Identify structural requirements for the Test, Inspection, and Observation program.
- Regular internal peer review of structural systems throughout the design process.

## **C. Organization and Approach**

Overall quality of the design and the documents for the structural drawings will depend on having the right individuals with the right experience, as well as following established engineering processes for documentation and team coordination.

- Only assign design professionals to the project with California hospital design experience.
- Establish early involvement of structural engineering expertise.
- Maintain the same engineering resources throughout the project design, OSHPD plan review, and construction.



- Apply design drawing standards for quality assurance.
- Validate computer generated results by manual hand calculations at critical locations.
- Cross coordinate structural plans, sections, details, notes, and specifications.
- Coordinate with other project design professionals to confirm geometric compatibility of AMPE systems components.
- Maintain Structural Engineer of Record involvement throughout the project until construction is complete.
- Provide for regular site visits by the project structural engineering personnel.

#### **D. Drawing Contents**

The structural drawings should include coordinated framing, foundation, and details that use Industry standard graphics and symbols common to structural construction documents.

***Tip:*** Place general information on the structural basis of design and the design criteria for complex project on first sheets.

Schematic design should include a presentation of the design criteria, demand on the building, and the primary structural system definition including foundations, framing systems, lateral force resisting systems, earth retention systems, etc.

Detail design should include the necessary specification, analysis, and detailing that address the interconnections of primary structural elements that form complete load paths.

Working drawings that are submitted to OSHPD for review must be complete. They must provide thorough and high-resolution detailing that integrates both the interconnection of primary and secondary structural elements with complete load paths as well as details that demonstrate the coordination of other disciplines. The complete specification of required materials and workmanship should be provided. Detailed drawings of anchorage and bracing of non-structural building components should be complete and be accompanied by references to seismic certifications, standard details, and preapprovals.



### 3.10 Guidelines for Mechanical Drawings

#### A. Purpose

The purpose of the mechanical drawings is intended to depict all mechanical systems and components necessary to provide code minimum heating, ventilating and air-conditioning (HVAC) services within the hospital.

#### B. Content

Based upon the complexity and scale of the project, the information provided on the mechanical drawings should show clear description of the work required for the project. In many cases, the project may involve the documentation of existing mechanical systems and should clearly identify new versus existing systems.

Some of the key components necessary on plans for all projects include:

- Identify any equipment that requires seismic certification and/or essential power.
- Identify equipment mounting detail locations.
- Provide humidification and temperature control for sensitive rooms as listed in CMC Chapter 3.
- Provide calculations that demonstrate that each room within the project is designed per CMC Table-4A. If the room is related to patient care and is not listed in Table-4A, it is important to provide an equivalent room. Otherwise, the ventilation rate may be based on AHSRAE 62.1.
- Identify airflow pressure room relationships in either table format or on the plans via flow arrows.
- Indicate wall ratings and locations of fire/smoke dampers.
- Provide the appropriate flexible connections where ductwork, etc. crosses seismic and other expansion joints.

Remodel projects within a hospital require precautions and measurements prior to start of construction to ensure that airflows in existing areas outside the project are not affected. Clearly identify on demolition drawings airflow measurements required prior the start of the demolition in the area surrounding the remodel.

Identify the impact to the air-handling unit affected by the remodel if applicable (i.e. rebalancing the unit, additional outside air, etc.) It can be done with a note or a schedule.

**Tip:** Following CAN 2-102.6 for remodel/renovation projects is critical in order to minimize OSHPD plan check comments.

**Tip:** Provide an air balance schedule that provides the following information.

PARTIAL AIR BALANCE SCHEDULE (AHU-3)															
RMR#	ROOM NAME	2019 CMR		2019 CMR CODE CALCULATIONS						DESIGN CALCULATIONS					
		TABLE 4A EQUIVALENT	VOLUME CUFT.	REL. PRESS.	TOTAL ACH50	TOTAL CFM	OSA ACH50	OSA CFM	SA CFM	RA CFM	EA CFM	TA CFM	TA From	OSA CFM	NOTES
1636	SEMI-PRIVATE PATIENT ROOM	PATIENT ROOM	2870	NR	5	254	2	89	580	480	0	100	1637	195	
1637	PATIENT TOILET	TOILET ROOM	570	NR	10	99	0	0	0	0	100	+100	1638		
1642	CORRIDOR	PATIENT AREA CORRIDOR	4800	NR	4	320	2	100	600	500	-	0	-	170	
2166	NSA ISOLATION ROOM	AIRBORNE INFECTION ISOLATION ROOM	1298	NR	12	320	2	65	325	-	400	+15	2168	40	
2167	PATIENT TOILET	TOILET ROOM	456	NR	10	76	0	0	-	-	100	+100	2169		
2168	WASTE ROOM	AIRBORNE INFECTION ISOLATION ANTEROOM	264	P	10	44	2	0	175	-	-	-175	2169	50	
1201	OPERATING ROOM	OPERATING ROOM	5194	P	20	1728	5	422	1800	1530	-	-370	1270	516	
1279	SUB STERILE	SUB STERILE ROOM	5020	NR	10	1920	2	224	1200	-	335	+335	1204	340	
1296	RECOVERY AREA	POST ANESTHESIA CARE UNIT	3650	NR	6	364	2	125	450	-	450	0	-	130	
Totals						4325		1095	5138	2510	1688	0		1460	

This schedule will expedite the plan review process as well as the air balancing of the systems during construction.

Some additional key components necessary for remodel plans include:

- Identify project boundary and be sure it matches architectural plans.
- Identify any temporary construction barriers.
- Provide a means to insure that airflows outside the project boundary will be maintained.

## 1) Information Plans

Various types of drawings are necessary to convey essential information such as schedules, piping diagrams, mounting details and control diagrams.

The title page should clearly define the project location and vicinity by graphical means. The applicable building codes, including the year and supplements date, should be stated. A drawing index is recommended to clearly identify all the unique systems that may be involved.

## 2) Site Plans

If the project involves outside (exterior) mechanical work, then it should be clearly shown in the site plan documentation.

## 3) Floor Plans

It is recommended to follow the architectural floor plan nomenclature for sheet order and sheet numbering in order to simplify the logical sequence of cross-coordination with all trades (disciplines). Traditionally, the floor plans provide the documentation of the architectural features as a shaded background and the mechanical devices are prominently shown on top of these locations. However, it is important to clearly identify room names and wall ratings for OSHPD review.

## 4) Enlarged Drawings

The drawings that contain a significant amount of information require much more space to clearly communicate the scope of work. These drawings tend to be the 1/4" scale or larger, in order to show exact placements and or intent. In addition, these drawings may comprise several elevations to demonstrate the intent.

## C. Organization and Approach

The mechanical drawings should reflect the clear scope of work and the application of separate systems on their own drawings will provide better definition of the intended work. Examples are in the following table:

Sheet Number	Sheet Description
M001	Mechanical Title Sheet, Drawing Index
M002	Schedules, Notes, Table 4-A Calculations
M100	Site Plan – Mechanical
M201	1st Floor Plan – Mechanical & Hydronic Plans
M202	2nd Floor Plan – Mechanical & Hydronic Plans
M301	Enlarged Floor Plans – Mechanical
M401	Piping Diagrams
M501	Details
M601	Controls
M701	Title 24 – Energy Code Compliance Forms

## D. Part 6 of Title 24 – Energy Code Compliance

Healthcare facilities are no longer exempt from compliance with Title 24- Energy Code. The design team is responsible for ensuring that the project complies with the Title 24 – Energy Code. Compliance forms shall be included as part of the drawing set. California Energy Commission’s website is a great resource.

**Tip:** Visit *Energy Code Ace – Get Forms to find online fillable compliance forms.*

## E. Local Requirements

The design team is responsible for ensuring that the project complies with local zoning standards, such as equipment screening, noise levels, etc. OSHPD does not enforce these requirements unless notified in writing by local jurisdiction.

### 3.11 Guidelines for Plumbing Drawings

#### A. Purpose

The purpose of the plumbing drawings is intended to depict all plumbing systems and components necessary to provide code required plumbing systems within the hospital.

## B. Content

Based upon the complexity and scale of the project, the information provided on the plumbing drawings should show clear description of the work required for the project. In many cases, the project may involve the documentation of existing plumbing systems and should clearly identify new versus existing systems. Some of the key components necessary on plans for all projects include:

- Identify any equipment that requires seismic certification and/or essential power.
- Provide fixture schedule for all fixtures.
- Demonstrate handwashing fixtures meet all CPC 210 requirements.
- Identify equipment mounting detail locations.
- Identify water temperatures and high limit alarm locations.
- Provide information indicating domestic hot water distribution temperatures per CPC Chapter 6.
- Identify medical gas zone valve and alarm locations.
- Identify areas where special precautions need be taken for overhead piping per CAN 5-310.9 Overhead Piping.
- Identify roof drainage calculations. Verify rainfall rates with the local jurisdiction.
- Identify Domestic Water sizing criteria.
- Indicate wall ratings.
- Provide validation that existing equipment and distribution services have the necessary capacity during remodel or expansion projects.
- Provide the appropriate flexible connections where piping, etc. crosses seismic and other expansion joints.
- Provide NPC-5 compliant water and waste emergency storage systems.
- Submit NPC-5 water rationing plan.

**Tip:** Consult Advisory Guide A5 – NPC-5 Water Rationing Plan for Hospital Facilities.

### 1) Information Plans

Various types of drawings are necessary to convey essential information such as schedules, piping diagrams, mounting details and control diagrams.

The title page should clearly define the project location and vicinity by graphical means. The applicable building codes, including the year and supplements date, should be stated. A drawing index is recommended to clearly identify all the unique systems that may be involved.

## 2) Site Plans

If the project involves outside (exterior) plumbing work outside the normal 5'0" from the building, then it should be clearly shown in the site plan documentation.

## 3) Floor Plans

It is recommended to follow the architectural floor plan nomenclature for sheet order and sheet numbering in order to simplify the logical sequence of cross-coordination with all disciplines. Traditionally, the floor plans provide the documentation of the architectural features as a shaded background and the plumbing devices are prominently shown on top of these locations. However, it is important to clearly identify room names and wall ratings for OSHPD review.

## 4) Enlarged Drawings

The drawings that contain a significant amount of information require much more space to clearly communicate the scope of work. These drawings tend to be the 1/4" scale or larger, in order to show exact placements and/or intent. In addition, these drawings may comprise several elevations to demonstrate the intent.

## C. Organization and Approach

The plumbing drawings represent work that is closely coordinated with many other disciplines such as architectural, structural, electrical, and mechanical. The need to have very well coordinated drawings is equally important with all disciplines. Last minute little changes, even room name changes, from one discipline can have an adverse impact on the other disciplines and on the construction documents.

The plumbing drawings should reflect the clear scope of work and the application of separate systems on their own drawings will provide better definition of the intended work. Examples are in the following table:

Sheet Number	Sheet Description
P001	Plumbing Title Sheet, Drawing Index
P002	Plumbing Schedules, Notes, Water Calculations
P100	Site Plan – Plumbing
P201	1st Floor Plan – Plumbing and Medical Gas Plans
P202	2nd Floor Plan – Plumbing and Medical Gas Plans
P301	Enlarged Floor Plans – Plumbing
P401	Piping Diagrams
P501	Details
P601	Controls

## **D. Local Requirements**

The design team is responsible for ensuring that the project complies with local zoning standards, such as equipment screening, noise levels, etc. OSHPD does not enforce these requirements unless notified in writing by local jurisdiction.

### **3.12 Guidelines for Electrical Drawings**

#### **A. Purpose**

The purpose of the Electrical Drawings for a particular project is to provide documents that fully describe the scope of the project, can be reviewed for code conformance, can be used for contractors to build from and for inspectors to reference during their construction observation efforts. The drawings should include sufficient detail to allow others to understand the full scope of the project and be sufficient for the successful construction of the project. The drawings should be scaled, well organized, neat, and readable. In addition to the drawings, typically some form of technical specifications are required to communicate acceptable product, installation requirements, testing and other information required to complete the contract document package.

#### **B. Content**

The drawing package should include a title page which clearly defines the project scope, location plans and vicinity map. Applicable building codes should be listed on the title page along with a summary of the work and any deferred approval items. Symbol lists are important to help others decipher the drawings. A drawing index is recommended to clearly identify all the pages included in the set. Site plans are required if any work outside of the building is required. Floor plans with lighting and power designs should be included to graphically represent the new work. Low voltage drawings should be included to detail nurse call systems, fire alarm and telecommunication wiring distribution and grounding requirements. Floor plans showing devices should also be included to identify and locate devices. Other drawings required for a complete set include equipment schedules, light fixture schedules, single line diagrams, panel schedules and load summaries.

Based upon the complexity and scale of the project drawings can be added or deleted as appropriate. The information provided on the electrical drawings should present a clear description of the new work required for the project.

The following is a checklist of key items that should be included with each submittal:

1. Electrical plans and specifications signed by the electrical engineer of record.
2. List of symbols and abbreviations used on plans and their meaning.
3. Correct electrical code edition cited.
4. Grid lines, room names and numbers on all floor plan sheets.

5. Wall fire ratings and legend.
6. Single line diagram of the electrical system showing normal and emergency source with segregation of the essential electrical system. Clearly identify components as normal, critical, life safety, or equipment.
7. Site plan showing service entrance, distribution system, service transformer, and generator location.
8. Drawings showing switchboards, panels, and all distribution equipment.
9. Load calculations or other approved methods showing verification of load capacity for all equipment and conductors. Show effect on both normal and emergency systems.
10. Panel schedules with totalized, tabulated loads. Panel schedules shall indicate rating of panel, branch/system (critical, life safety, equipment) and a directory that indicates loads served by each circuit.
11. Clearly indicate, AIC ratings voltage and amperage ratings of all panelboards and distribution equipment.
12. Schedules with voltage, loads and connection requirements for mechanical, kitchen and medical equipment requiring electrical connections.
13. Feeders phase and ground conductors, conduit sizes, estimated lengths, voltage drop values and overcurrent protective devices.
14. Location and power source for all wiring devices, including receptacles, lights, switches, junction boxes, power outlets, and telephone outlets.
15. Fire alarm system. Provide specifications for equipment, show location of all devices, and show connection to life safety power source. Indicate if power limited.
16. Nurse call system. Provide specifications for equipment, show location of all devices, and show connection to critical power source. Indicate if power limited.
17. All equipment must be listed, labeled, or certified by a nationally recognized testing laboratory including x-ray and diagnostic equipment.
18. Coordination studies for all new devices associated with campus fire pumps, elevators and essential equipment.

## **1) Site Plans**

If the project involves outside (exterior) electrical work, then it should be clearly shown on the site plan documents. Based upon the complexity of the project, the site plan can be developed into multiple documents such as:

- Site Plan – Electrical Power
- Site Plan – Lighting
- Site Plan – Low Voltage Systems



## **2) Power Lighting and Low Voltage Plans**

It is recommended to follow the architectural floor plan nomenclature for sheet order and sheet numbering in order to simplify the logical sequence of cross-coordination with all disciplines. Traditionally, the power, lighting and low voltage floor plans provide the documentation of the architectural features as a shaded background and the electrical devices are prominently shown (in bold print) on top of these backgrounds with circuiting and wiring requirements shown bold as well.

## **3) Enlarged Drawings**

Enlarged plans for specific rooms such as IT and electric rooms can be provided to detail layouts for equipment and code mandated clearances. These drawings tend to be the 1/4" scale or larger, in order to show exact placements and or intent.

## **4) Single Line Diagrams and Panel Schedules**

Single line diagrams that show normal and emergency sources along with feeders and Overcurrent Protection Devices (OCPD's). Panel schedules that match the single line diagrams and indicate branch circuiting. These drawings are schematic in nature and no scaling is required.

## **C. Organization and Approach**

The electrical drawings should represent work that is closely coordinated with many other disciplines such as architectural, structural, medical equipment, kitchen mechanical, and plumbing. The need to have very well coordinated drawings is especially important with respect to mechanical and plumbing equipment. Reflected ceiling plans can be used for cross discipline coordination efforts. Frequently if multiple disciplines are not coordinated, single disciplines can be signed off as code compliant, but issues can be discovered in the field. Many of the costly change orders are a direct result of inaccurate documentation of existing conditions and/or poor coordination between different trades. It is the designers and the builders' responsibility to survey existing conditions and to coordinate all systems during design to avoid rework in the field.

## **D. Drawing Content**

The electrical drawings should reflect the clear scope of work and the separation of different systems on their own drawings. This will provide better definition of the intended work. Examples of typical sheets in an electrical set are as follows:

- Electrical Title Sheet, Drawing Index
- Schedules, Notes, Lighting Schedules
- Title 24 Energy Code Compliance Forms
- Site Plan – Electrical
- Site Plan – Lighting
- Site Plan – Low Voltage / Communication



- Floor Plan – Electrical
- Floor Plan – Lighting
- Floor Plan – Low Voltage Systems (Voice/Data, Security, CA-TV)
- Floor Plan – Fire Alarm
- Floor Plan – Nurse Call
- One Line Diagram
  - Power
  - Low Voltage Systems
  - Grounding
- Panel Schedules
- Enlarged Floor Plans – Lighting, Power Low Voltage Systems
- Details
  - Wiring
  - Installation
  - Grounding

## **E. Existing Conditions**

Projects that occur within existing spaces require an additional level of care and planning. The need for good site investigation and documentation requires a significant level of time and costs of the design team. In many cases, the initial scope of a project may be significantly altered once the existing infrastructure is evaluated.

The emphasis should be placed on field investigations, followed by clear documentation of the existing facility restraints regarding the project.

The existing electrical and low voltage systems, in most cases, must stay operational and thus significant work-around planning must be developed.

Showing much of the existing infrastructure helps to convey the true scope of work to the trades involved and minimizes future scope changes.

***Tips:***

- Use the “Electrical Equipment for Healthcare Facilities” guideline located on OSHPD website.
- Review and update scope of work on lead sheet to be accurate and representative of the proposed work for each project submitted.
- Verify that the symbol lists are provided, accurate and appropriate for the work shown on electrical drawings.
- Provide a construction sequence with maximum outage and/or downtime of essential equipment if design/construction will result in power outages.
- Following CAN 2-102.6 for remodel/renovation projects is critical in order to minimize OSHPD plan check.
- Verify that circuits shown on the plans match the circuit descriptions in the panel schedules.
- Show circuiting with conduit sizing and conductor counts for all circuit runs (notes are OK).
- Include load summaries to demonstrate sufficient capacity of new and existing electrical equipment for all added loads (See PIN 38 for guidance on how to present on drawings).
- For large projects with multiple sheets full of panel schedules provide panel schedule “keys” (similar to building key plans) on the panel schedule sheets.
- Follow requirements of PIN 70 to document coordination of Essential Electrical System Over Current Protection Devices.
- Visit Energy Code ACE to obtain Title 24 compliance forms. Design from the start to meet Title 24 Energy Code requirements. Healthcare facilities are no longer exempt from compliance with the Title 24 - Energy Code. The design team is responsible for ensuring that the project complies with the Energy Code and compliance must be demonstrated on the contract documents. Compliance forms are required as part of the contract drawing set. California Energy Commission’s website is a great resource.

## SECTION 3 APPENDIX Plan Design and Review Guidelines

### Recommended Graphics and Symbols for Rated Walls

#### General Rated Wall Graphics

The minimum designation of rated walls that should be provided on all plans, including architectural floor plans, mechanical, plumbing, and electrical distribution plans should be similar to the following:

One-Hour Rating	
Two-Hour Rating	
Three Hour Rating	
Four-Hour Rating	

Fire barrier walls for separation of spaces such as atriums, suites, or fire partitions required for tenant space separations may use a special graphic designation to distinguish its special use. Such graphics should be clearly identified in a graphic legend on the drawings.

One-Hour Separation Wall	
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#### Special Rated Wall Designations

For fire barrier walls which have special functions that need to be identified in plans, the following may be used:

Horizontal Exit or Exit Passage (Two-Hour)	
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Smoke partitions which enclose elevator lobbies and smoke barrier walls which separate smoke compartments should be use a unique graphic:

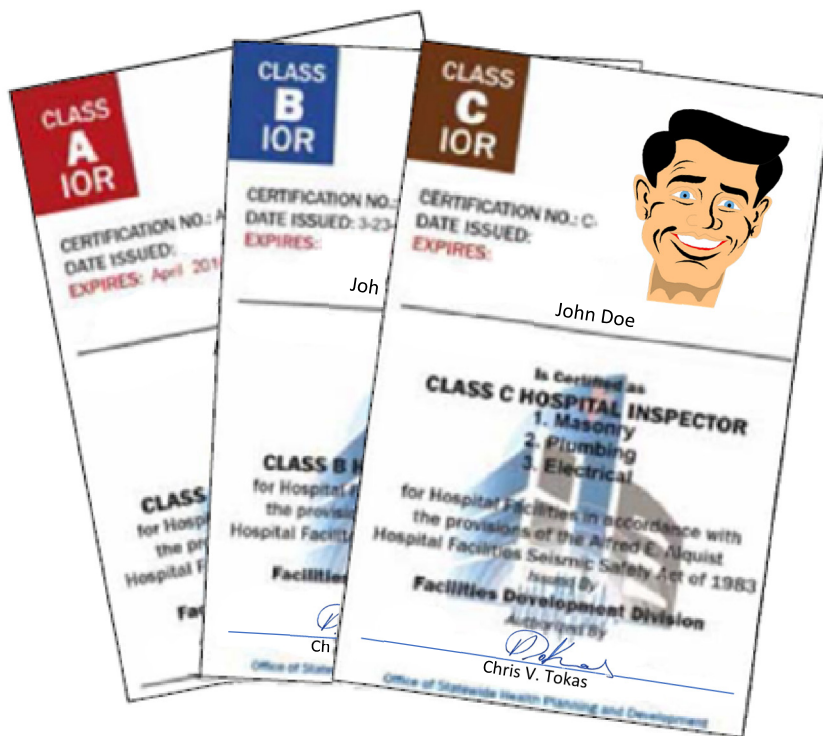
Non-Rated Smoke Partition	
One-Hour Smoke Barrier	

Fire walls (CBC 706) where separations create separate buildings and have limited, or no penetrations, and must be continuous from exterior wall to exterior wall should use the following graphic:

Two-Hour Fire Wall	
Three-Hour Fire Wall	
Four-Hour Fire Wall	

## SECTION 4

### Inspector of Record Guidelines





## SECTION 4 Inspector of Record Guidelines

### 4.0 Introduction

The actions of the Inspector of Record (IOR) on a project are based on the requirements outlined in Chapter 7 of the California Administrative Code (CAC), Part 1 of Title 24 of the California Code of Regulations. The IOR is interviewed and approved for each project by the design professional of record as appropriate and works under the direction of the Architect of Record (AOR) and/or the Engineer of Record (EOR) (See Section 7-144 and Section 7-145 of the CAC); is employed by the hospital governing board or authority; and is then approved for the project and monitored by HCAI for competence and adequately ensuring compliance (see Section 7-213 of the CAC).

When questions arise on the assigned project, the IOR should consult the design professional in responsible charge, typically the AOR and/or the EOR, the appropriate HCAI personnel associated with the project, including but not limited to the Compliance Officer (CO), Fire Life Safety Officer (FLSO), District Structural Engineer (DSE), and if necessary, the Regional Compliance Officer (RCO).

It takes much more than simply having an HCAI certification to be an HCAI inspector. A complex hospital construction project requires a knowledge-based inspector with the proper background and experience for the project to be constructed. Inspectors help make a project successful by performing their duties (Section 7-145 of the CAC) properly and effectively without ever compromising their position. This section gives a general description of the duties and responsibilities, with insight to the best practices for the IOR, along with an overview of the necessary working relationships required for a successful project.

### 4.1 Certified Hospital Inspector Code of Ethics

The Inspection Service Unit (ISU) at HCAI administers the Hospital Inspector Certification Program, approves inspectors as part of the project approval process, and is authorized to examine, certify, recertify and monitor hospital inspectors within HCAI's jurisdiction. HCAI promotes a high standard of professionalism in the hospital inspection industry. Certified hospital inspectors are expected to adopt and uphold this Code of Ethics (Code).

Integrity, honesty, and objectivity are the fundamental principles embodied in this Code, which sets forth the obligations of ethical conduct for each certified hospital inspector of record ("Inspector").

**Tip:** Hospital Inspectors of Record should adopt and follow the Code of Ethics to provide high ethical standards to safeguard the public, the profession and the State's physical healthcare infrastructure.



## **A. Duty to Project**

Inspectors are employed by a hospital governing board or authority, approved by HCAI and work under the direction of the architect or engineer in responsible charge for a project. Inspectors shall avoid activities that compromise, or appear to compromise, professional independence, objectivity, or inspection integrity.

- Inspectors shall not inspect facilities under contingent arrangements whereby any compensation or future referrals are dependent on reported findings or project approvals.
- Inspectors shall not solicit or accept gifts, meals, tickets, discounts or other privileges from contractors, material suppliers, testing laboratories, special inspectors, design professionals, construction managers or other third parties associated with a facility subject to inspection.
- Inspectors shall not accept compensation, including contingent fee arrangements or referral fees, for recommending contractors, services, or products to inspection clients or third parties having an interest in a facility subject to inspection.

## **B. Duty to Public**

Inspectors shall act in good faith toward clients, HCAI, contractors and the public generally.

- Inspectors shall hold paramount the safety, health, and welfare of the public in the performance of their professional duties.
- Inspectors shall perform services only in the areas of their competence.
- Inspectors shall be objective in reporting and not knowingly understate or overstate the significance of reported conditions.
- Inspectors shall be fair, honest, impartial and act in good faith in the performance of their professional duties.

**C. Duty to Profession** Inspectors shall comply with all laws and avoid activities that may harm the public, discredit themselves or reduce public confidence in the profession.

- Advertising, marketing and promotion of an inspector's services or qualifications shall not be fraudulent, false, deceptive, or misleading.
- Inspectors shall continue their professional development throughout their careers.
- Inspectors shall comply with all laws, regulations, and certification requirements of the State of California.
- Inspectors shall not discriminate in any business activities based on race, color, national origin, ancestry, sex, religion, age, marital status, sexual

orientation, or disability, and shall comply with all federal, state and local laws concerning discrimination.

- Inspectors shall not engage in any practices that could be damaging to or discredit the hospital inspection profession.

## 4.2 Knowledge

The inspector should be thoroughly familiar with the following:

- Part I, Chapter 7 of the California Administrative Code.
- Policy Intent Notices (PINs) appropriate for the project.
- Applicable Code Application Notices (CANs).
- Contract Document requirements.
- Project schedules.
- Applicable codes and standards.
- Approved contract document (Drawings and Specifications).
- All instructions or clarifications issued by the design Professional of Record.
- Requirements for testing and inspections. Based on the approved TIO Program.
- Hospital procedures for notifications and special requirements.
- Temporary barriers and egress requirements as appropriate for the project.
- Infection control policies and work practices to reduce risk of exposure to infectious organisms during demolition, remodel, and construction.
- The various parties involved with the project.
- Emergency procedures.
- Safety requirements for construction and the facility.
- All of the Authorities Having Jurisdiction (AHJs) associated with the project that require involvement through the project start- up, duration, close-out, and finalization.
- All associated design professionals as appropriate for the project.
- The geotechnical services and special testing lab for the project and how to notify and schedule required inspections and other testing as appropriate for the project.
- The inspection request processes.
- The General Contractor's Quality Control Program.
- Approved program flexes.
- Radiology physicist report.

- Medical equipment.
- Engineering judgments.

### 4.3 Principal Duties

#### A. Scope

The following are the duties outlined in Chapter 7 of the California Administrative Code and are the minimum requirements for the performance of principal duties.

#### B. Code Required Duties California Administrative Code, Section 7-145, Continuous inspection of the work.

The general duties of the inspector shall be as follows:

- 1) The IOR shall have personal knowledge, obtained by continuous inspection, of all parts of the work of construction in all stages of its progress to ensure that the work is in accordance with the approved construction documents.
- 2) Continuous inspection means complete inspection of every part of the work. Work, such as concrete or masonry work which can be inspected only as it is placed or assembled, shall require the constant presence of the IOR. Other types of work which can be completely inspected after the work is installed may be carried on while the IOR is not present. In no case shall the IOR have or assume any duties which will prevent continuous inspection.
- 3) The IOR shall work under the direction of the architect or engineer in responsible charge. All inconsistencies or seeming errors in the approved construction documents shall be reported promptly to the architect or engineer in responsible charge for interpretation and instructions. In no case, however, shall the instructions of the architect or engineer in responsible charge be construed to cause work to be done which is not in conformity with the approved construction documents.
- 4) The IOR shall maintain a file of approved construction documents on the job at all times including all reports of tests and inspections required by the construction documents and shall immediately return any unapproved documents to the architect or engineer in responsible charge for proper action. The IOR shall also maintain on the job at all times, all codes and regulations referred to in the approved construction documents.
- 5) The IOR shall notify the Office in writing:
  - When the work is started or resumed on the project.
  - At least 48 hours in advance of the time when foundation trenches will be complete, ready for footing forms.
  - At least 48 hours in advance of the first placing of concrete.
  - When work has been suspended for a period of more than two weeks.

- 6) The IOR(s) shall maintain field records of construction progress for each day or any portion of a day that they are present at the project site location. The field record shall state the time of arrival, time of departure, a summary of work in progress and noted deficiencies in the construction or deviations from the approved construction documents. The field record shall document the time and date of all significant correspondence with the contractor regarding incomplete work, potential deficiencies or deviations which require the contractor's attention and could potentially affect the timely and compliant completion of the project. This field record shall document the date, time, and method of correction for any noted deficiencies or deviations. In addition, this record shall contain the following as applicable:
- a. Copies of all certificates, tags, marks, or other evidence of material properties and/or manufactured components as required by the California Building Standards Code.
  - b. The time and date of placing concrete; time and date of removal of forms and shoring in each portion of the structure; location of defective concrete; and time, date, and method of correction of defects.
  - c. Identification marks of welders, lists of defective welds, and manner of correction of defects and other related events.
  - d. A list of test reports of all nonconforming materials or defective workmanship and shall indicate the corrective actions taken.
  - e. When driven piles are used for foundations, the location, length and penetration under the last ten blows for each pile. It shall also include a description of the characteristics of the pile driving equipment.
  - f. The log of changes to the work prepared by the architect or engineer in responsible charge required by Section 7-153(e).
- 7) Field records may be kept electronically. All field records of construction progress shall be retained on the job until the completion of the work and shall, upon request, be made available to the Office, the architect or engineer in responsible charge and the owner. Electronic records may be retained off-site if made available during on-site and remote review of documents. Upon completion of the project, these original field records shall be submitted to the hospital governing board or authority.
- 8) The IOR shall notify the contractor, in writing, of any deviations from the approved construction documents or new construction not in compliance with the California Building Standards Code, which have not been immediately corrected by the contractor. Copies of such notice shall be forwarded immediately to the architect or engineer in responsible charge, owner and to the Office.

### **C. Code Required Verified Compliance Reports: 7-151**

The IOR shall submit verified compliance reports (Section 7-151 of the CAC) (Form OSH-FD-123) as stated in the approved TIO Program. Note that a verified

compliance report must always be submitted at the completion of the work. The IOR as well as the AOR or EOR should monitor the status of all post approval items and confirm compliance of approved construction changes in the field. The IOR is required to have approved documents at hand. Inspectors shall base their inspections on HCAI approved construction documents. Shop drawings are not part of the HCAI approved construction documents and shall not be used as a basis for inspection unless they have been submitted to and approved by HCAI as part of the construction documents.

#### **4.4 Documentation and Processing “Non- Material Alterations”**

The California Administrative Code, Section 7-153. Changes to the approved work, defines “Materially Alter” (as applied to construction projects or approved construction documents) as any change, alteration, or modification, as determined by HCAI, that alters the scope of a project, causes the project to be in noncompliance with Title 24, or causes an unreasonable risk to the health and safety of patients, staff or the public. Only changes that materially alter the work shall be submitted to HCAI as an amended construction document for review and approval.

Code Application Notice CAN 1- 7-153(b) defines the types of changes to the approved construction documents that do not materially alter the work during construction and therefore are not subject to HCAI review. The IOR’s record set of approved documents is utilized to monitor, record, and provide for HCAI observation of items that qualify as “does not materially alter” the work. The design professional shall determine what qualifies and what does not. A Request for Information (RFI) form is normally used to initiate the determination. A suggested process included in the RFI would be a checkbox area that indicates:

- No amended construction document required.
- Amended construction document required.
- Does not materially alter work.

If the architect or engineer in responsible charge of a project determines that changes to the approved construction documents are necessary and do not materially alter the work, all such changes shall be stamped and signed by the appropriate design professional(s) pursuant to CAC Section 7-115. All changes in the work are subject to concurrence of the OSHPD field staff as to whether the change materially alters the work.

The architect or engineering responsible charge shall maintain a log of all changes to the work of construction. The log shall indicate whether OSHPD has made a determination as to whether each change materially alters the work, the date such determination was made, and the name of the OSHPD staff who made the determination. The log shall be maintained on the project site as part of the inspector’s field records.

The log shall be maintained showing all items approved by the design professional as materially altering. The log shall show sequential numbering, item description, and a block showing it was posted would be effective.

The record set should indicate areas that are modified with cloud and delta and in the title block provide the number corresponding to the delta. In addition, the changes need to be stamped and signed.

#### **4.5 Additional Duties**

There are numerous other duties that can fall under the IOR's purview. This section outlines those that may be included as appropriate.

##### **A. Chronological Record**

Keep a chronological record of the following:

- All inspections performed, including special inspections, geotechnical inspections, those done by system certifiers, verifications, observations by design professionals, project walkthroughs, and all project-related inspections; violations noted and how notifications were presented.
- When notifying the contractor of noncomplying work use reasonable judgment and verbal notification when appropriate; when the contractor does not take immediate and appropriate action the IOR must comply with Section 7-145(b) of the CAC.
- Always document when and how notifications have been given (even when initial verbal notification has been given).
- All requests and notifications for the following:
  - Clarifications.
  - Interpretations.
  - Amended Construction Documents.
  - Deferred Approval Documents.
  - Inspection requests.
  - Noncomplying work.
  - Notifications given to the contractor.
  - Discussions and agreements made, comments made by AHJs and/or needed corrections, memos of concerns, and inquiries to the DPOR for document interpretations.
  - Incidents affecting the hospital systems or accidents related to the project.
  - Schedule impacts.
  - Workforce.

- Weather.
  - Any deficiencies in materials and installations.
  - Any direction given by the DPOR.
  - All photos taken for progress identification and problem documentation.
- Log and record areas that by definition of “non-materially alter” have added or modified the drawing and/or specifications for HCAI review upon visits. The log shall be maintained and available by electronic transmission and on the project site as part of the inspector’s field records. Section 7-153 (e).
- Log and record the areas where Preapproved Details have been incorporated for HCAI review upon visits – refer to PIN 51.
- Provide courtesy notices to the contractor, design professionals concerned of deficiencies observed prior to requests for inspections being requested.
- The IOR may serve as a special inspector when approved in the TIO Program. (See Section 5 of this volume for additional information on special inspections.)
- The IOR is responsible for assuring that all areas requiring special inspections are inspected and accepted by special inspectors. The IOR shall maintain on the job a file containing daily field reports for all special inspections.

## **B. Plans and Specifications**

The IOR should have in his/her possession the following to safeguard the public by verifying that the hospital building(s) is constructed in accordance with the approved documents:

- Approved drawings and specifications
- All documents relating to changes, amended construction documents (ACD), deferred submittals, the non-materially altered NMA, the log of the changes.
- The related building codes and standards as indicated by CAN 1 Enforceable Codes, and the approved documents.

The IOR shall maintain a record set of the approved documents:

- The record set shall be a true representative of the work in place.
- Deferred submittals require additional monitoring by the IOR for approval from HCAI and incorporation into the approved documents.
- Project specifications are maintained and must be updated with the changes that occur to the same extent that the drawings are updated through clarifications, ACDs and NMAs.



- The record set should reflect areas that by definition of “not materially alter” have added or modified the drawing.
- The record set should reflect the areas where Preapproved Details have been incorporated.

### **C. Files, Records and Reports**

The IOR shall maintain files for the project as outlined in Section 7-145 of the CAC and the following:

- Start of Construction Notice
- Contractor’s Schedule
- Deferred submittals
- All inspections performed (on site and off site).
- Inspection requests.
- Special inspection reports.
- Certifications of all special inspectors used for the project.
- All project-related meetings
- Daily reports from the inspection team.
- Test results from materials and certification of materials.
- Approved concrete mix designs.
- Welding procedures and Welders’ Qualifications.
- All reports and documentation given by AHJs’.
- All noncompliance notices issued and related notifications and communications that have had an impact on the documents’ progress.
- Digital image or photos taken of the project.
- All HCAI field staff reports.
- The IOR shall compile and maintain the verified compliance reports submitted by the special inspector(s) for the work performed.

#### **4.6 Inspections and Types of Inspections Provided by the IOR**

There are three types of inspections provided by the IOR:

1. Continuous inspections as outlined earlier in principal duties.
2. Inspections completed by the use of inspection requests.
3. Required inspections listed with the TIO Program as outlined Section 7-141 of the CAC.

HCAI should only allow the IOR to inspect the project consistent with what is provided in the permit documents. Construction and inspections should be limited to what has been permitted. If the project has a permit, then this indicates that there is adequate information contained in the documents to inspect. It is not the IOR's responsibility to interpret code, but to verify installations meet code requirements that are part of the approved documents. The IOR should inspect what is installed and either confirm that it meets the requirements indicated in the permit documents or note the deficiencies and deviations not in compliance with the California Building Standards Code in a daily report, inspection request, and/or courtesy notice provided to the architect, owner, and contractor in writing as outlined by code. In this regard the IOR should:

- Communicate with the contractor to ensure understanding of the contract documents.
- Request manufacturer's literature or printed instructions if referenced and in doubt.
- Observe that the testing laboratory performs all tests and inspections required.
- Review test results and notify the contractor and architect of observed deficiencies.
- Consider suggestions or recommendations made by the contractor and refer them to the architect.
- Accompany the architect's consultants when observing or inspecting the work. Record and report conditions that may cause a delay in completion of the work.

The IOR should never authorize deviations from the contract documents nor should an IOR interfere with the work being performed by the contractor nor assume any responsibility for the performance of the contractor's work. It is not the role of the IOR to advise or issue directions relative to any aspect of construction means, methods, techniques, sequences, or procedures.

## **A. Inspection Requests**

The inspection request is one of the few important tools an IOR has for documenting, tracking, organizing, verifying, and maintaining accountability and provability of inspections conducted on a HCAI project. CAC Section 7-145(a)1 requires the IOR to have personal knowledge of all parts of the work. Inspections are utilized for the following:

- As outlined in the TIO.
- For all work needing inspections so that the IOR knows where the contractor is working.
- For utility shutdowns.
- System Tests.
- For AHJ requests.

## B. Starting the Inspection Request Program

- Begin instruction of the request program at the first preconstruction meeting.
- Have a one-on-one meeting with the project contractor and let him/her know what you expect and need.
- At each pre-installation meeting review how the inspection request is initiated and what is required to initiate it.
- Review with the contractor's project manager how and when the inspection requests are to be turned in.
- Be consistent in inspection. Enforce the following policy – Insist that all work require an inspection by the approved inspector and/or special inspector prior to covering the work.

## C. Rejecting Inspection Requests

Inspection requests can be rejected when appropriate. It is a mistake for the IOR to consider an inspection request when the work is not complete or has not been started. If the work is not ready for inspection the IOR should reject that inspection request. If only a portion of the work is ready for inspection the IOR should not give a partial approval. The request should be rejected and the IOR should ask the contractor to submit a new one when the completed work is ready for inspection.

The IOR should be familiar with the inspection request form. On the form, signatures are required by the contractor and the subcontractor requesting the inspection. By signing the form these individuals have indicated that they have verified that the work is complete and in compliance with plans, specifications, and building code requirements and is ready for inspection. There must be strict accountability so the IOR must be diligent in the inspection process. This diligence also plays a key role in any potential litigation or arbitration. The inspection request log indicates the time frame in which inspections are done and is used often by the contractor in arbitration.

**Tip:** *The contractor will properly present inspection requests to the IOR provided the IOR is consistent in implementing the system.*

## D. Logging Inspection Requests

- When an inspection request is received, it should be date-stamped and initialed by the IOR.
- The IOR keeps the original inspection request in a binder with a log showing the request, date received, date inspection requested, date executed, trade requesting, and approval or rejection. After updating the log, the IOR should make a copy and post it outside the IOR's or contractor's office for subcontractors and contractors to view.

- After completing the inspection and filling out the form, the IOR makes a copy of the original and places it in the outgoing mail. If an inspection is rejected, a copy of the rejection should be given to the contractor. The original is retained by the IOR in the binder.

#### **4.7 Other Project Related Duties**

Other Project Related duties of the IOR include the following:

- Attend preconstruction meetings.
- Attend various meetings as required.
- Effectively communicate with contractor, HCAI, the Structural Engineer of Record (SEOR), the AOR, and owners.
- Keep in contact with the AHJs and notify them about all phases of the work and meetings that may require their presence at the site. Keep ahead of the work being performed to anticipate required inspections that might tend to interfere with the progress of the construction.
- Do not assume responsibility for any safety procedures. Should hazards be observed, report conditions to the contractor.
- The IOR is not a safety engineer or a safety inspector. Job-site safety measures and procedures are the sole responsibility of the contractor and are normally so specified in the contract documents. Many safety aspects of a project under construction involve the adequacy of shoring in trenches or scaffolding or false work, which cannot be easily determined without an engineering analysis of size and placement of support members. The IOR should find out who the contractor has designated as its site safety engineer or representative-in-charge of site safety. Also, the IOR should determine who is second in charge in case the contractor's safety representative is absent. These individuals are responsible for maintaining safe conditions at the job site for the workers, authorized visitors, and others who have a right to be on site, including the architect, consultants, AHJs, and the IOR.

#### **4.8 Checklists**

Many books written on the subject of project inspections and administration of inspections include checklists. One such book is the Construction Inspection Manual. Many checklists have been developed. As discussed in Section 5 of this volume, the TIO Program is a basic checklist of tests, inspections, and observation requirements. It is described in Section 7-141 of the California Administrative Code. The TIO Program can be used as a guide for testing requirements and special inspections.

The most complete checklist of what needs to be verified and inspected would be the approved documents and the information contained therein. The building codes and standards are also applicable.

HCAI has a standard fire and life safety checklist and other checklist on their website. Comprehensive checklists can be purchased from a variety of sources. Specific checklists are not provided here because of the numerous items needed to be comprehensive and because the checklist would vary from project to project.

## **4.9 Coordination Concerns**

Coordinating the work is usually the responsibility of the contractor. However, successful coordination requires all parties to communicate with each other so that construction can proceed in an orderly manner. Although verbal communication is used extensively, scheduling, and legal procedures required during construction are best served by written correspondence, with proper distribution of copies to all concerned parties including the owner's representative.

In addition to work coordination, various notifications and compliance with hospital facility in-house requirements must be met. These notices and compliances should be approved by the owner's representative. Because lives are at stake in the hospital, procedures for notifications, barriers, infection control, and life and safety issues concerning the hospital need to be communicated to all parties of the construction group, AHJs, AOR, EOR, etc. The best times to review these issues are during preconstruction meetings. These should be held prior to every phase of construction or when a new group begins construction.

The IOR needs to have continuous knowledge of the construction progress and schedule. The IOR should be aware of how the work affects the operations of the hospital. Though the IOR may not be directly responsible for the execution of notifications and infection control practices, he or she should be aware when procedures are not followed or forgotten and notify the appropriate personnel.

## **4.10 Preconstruction Meetings**

A preconstruction meeting can be a powerful tool and help prevent much of the conflict that could develop in the field. The following individuals should attend the preconstruction meeting:

- General contractor.
- Contractor (who exerts minimum, direct control and coordination of the subcontractors).
- Project manager (who understands the contractual obligations of his or her subcontractors).
- Project engineer (who understands the need and status of all submittals).
- Project secretary (who records meeting attendees and provides meeting minutes).
- Subcontractor (at least the foreman, project manager, or other representative).
- Manufacturers' representatives (who can provide information and guidelines).

- Architect and engineer in responsible charge (when appropriate).
- Hospital staff of affected areas (when appropriate).
- HCAI personnel (who can advise on HCAI's expectations).
- Project IOR (or all IORs if there are more than one).
- Special inspector (if needed or required).
- Consultants (when needed).
- Facilities maintenance representatives (who normally will be invited to the preconstruction walk-through if there are areas of the hospital that may be affected).
- Infection control and safety officers.

The advantage of having the preconstruction meeting is that all of the key players will be in attendance and thus everyone will be apprised of their individual accountability. The IOR can provide advice on potential problems, HCAI-required procedures, and the minimum requirements to satisfy code, approved documents, hospital procedural considerations, infection control enforcement, life and safety issues, and inspection procedures. Chapter 7 of the CAC is very clear about the need for approved documents prior to commencing work. Some projects will refer to a preconstruction meeting as a pre-installation meeting. Some project specifications may lack direction in defining when meetings are required, who will attend, and how it will be conducted.

### **A. Preparation for the Preconstruction Meeting**

Above all else, the IOR should be prepared. The IOR should have all information received from the owner and architect available. The IOR needs to review this prior to the meeting. This information should include:

- Approved drawings.
- Project specifications.
- Project schedule.
- A copy of an inspection request.

The IOR should be familiar with the project schedule and the actual work taking place. If advanced notice of the preconstruction meeting is given at the owners meeting, it then becomes part of the meeting minutes and will be carried forward until the preconstruction meeting takes place.

### **B. During the Meeting**

Meetings are usually run by the AOR, the EOR, the POR, or the general contractor. Participation by other contractors and subcontractors will vary based on their level of preparation and experience. During the pre-construction meeting, the general

contractor should be able to give assurances regarding personnel and materials to complete the work.

The HCAI field staff may do the following:

- Request the design professional of record (DPOR) establish and define lines of communication among subcontractors, contractors, design professionals, the IOR, and HCAI field staff.
- Identify and review the requirements of the Hospital Seismic Safety Act of 1983 and Chapter 7 of the CAC.
- Summarize the overall duties, observation, and coordination functions of the AOR or SEOR as required by Chapter 7 of the CAC, including preparation of Amended Construction Documents and verified reports, site visits to verify work, and certification and submittals to HCAI.
- Summarize the overall duties of the IOR, reporting relationships, and the IOR's responsibility to verify compliance with the plans, specifications, and applicable codes.
- Discuss required coordinated review of the project by HCAI representatives (CO, FLSO, and DSE).
- Identify specific and/or unusual code and project requirements.
- Explain code requirements for shop drawings, submittal, review, and approval. Outline procedures for meeting the requirements and how submittals will impact project schedule.
- Explain the procedures and requirements for approving amended construction documents. Review the approved TIO Program.
- Discuss the schedule for submittal of deferred approval items to avoid delays in construction.
- Request scheduling requests from owners and contact information for the hospital representative.

The IOR should do the following:

- Ask how the contractors intend to accomplish the work and allow them to walk you through the construction process.
- Review the specifications. Frequently, the subcontractor is unaware of the unique requirements of the project and may not have reviewed the specifications.
- Give a copy of the inspection request to all parties and reasons for the correction by providing the applicable code, standard, specification section and the appropriate reference to the approved drawing. Provide a copy of how the IOR will notify the contractor and -the notification requirements. It is important to stipulate the quality standards expected so that all responsible parties will adhere to the approved documents.



- Review the TIO Program requirements.
- Review the noncompliance procedures.
- Review what the IOR wants to see and at what stage the IOR must perform inspections.
- Discuss material inspection upon arrival at the project.
- Ensure that contractors and subcontractors understand how facilities are coordinated through the IOR and the project manager.
- Make it clear to the contractor that the IOR is not responsible for reviewing the adequacy of the contractor's safety program.
- If HCAI field representatives are not present, describe AHJ's involvement, requirements and procedures with contractors and subcontractors for the permitted documents and specifically the Testing Inspection and Observation Program.

The preconstruction meeting is an opportune time to bring up fire stopping of penetrations and to inform the contractor that all penetrations will have to be completed per a listed testing agency, such as Underwriters Laboratories (UL). Engineering judgments should only be used in extreme cases. Bringing such issues to the contractor's attention early should mitigate potential problems.

Note if and what specifications were reviewed, who attended, and, in general, what was covered. For example, the contractor and/or subcontractor needs to be aware of any special requirements, inspection requirements, HCAI notifications, testing requirements, infection control requirements, notification requirements, shutdown procedures, submittal requirements, material samples, special requirements for phased construction, etc.

#### **4.11 OSHPD Interaction**

The IOR acts under the direction of the AOR and/or EOR. He or she represents the eyes and ears for various parties including the architect, structural engineer, AHJs, owners, and owners' representatives.

It is important that the IOR prepare documentation representing the various inspections conducted on an HCAI project to give evidence of compliance and that inspections are conducted continuously. This allows the CO, DSE, FLSO, and RCO to observe the inspection process and to be assured that adequate and competent inspection is provided.

HCAI staff members ensure that inspections are adequately and competently conducted and documented on the hospital project. It is not the responsibility of HCAI to provide the inspections.

The IOR should be able to show an HCAI representative the approved documents and the maintained record documents. The documents show approved changes and a true representation of the project. The IOR should be able to show how inspections have been organized, discuss project progress, and describe any problems being faced in the field.

Normally, the IOR will perform a walk-through of the project with the HCAI representative. If the HCAI representative has any concerns at that time, the inspector shall note it and ensure that the appropriate parties are notified via a copy of the HCAI field staff report. The responsibility for inspection resides with the IORs; HCAI only observes that the process is working, and that adequate and competent inspections are provided.

HCAI representatives are also valuable resources for the IOR since they have a wealth of first-hand information regarding hospital construction practices and should be consulted as needed. HCAI representatives encounter many problems as they visit various projects. HCAI representatives could assist in preventing mistakes and advise the IOR. The IOR should use HCAI 's visits to take advantage of the advice provided by its representatives.

***Tip:*** *The project inspector shall contact the various OSHPD representatives for special reviews of work and needed visits.*

#### 4.12 Concluding Remarks

An IOR needs to have good communication skills to minimize misunderstandings. By being consistent and providing organized documentations, an IOR can assist in keeping a project on schedule. There are no skills, however, that can replace a well-produced set of approved documents and a contractor willing to comply with them. But with foresight and a thorough understanding of the process, an IOR can pace the project, complete timely inspections, and provide notifications and documentation that will keep a project moving. The IOR can help to ensure that the project complies with the approved documents, making for a smoother close-out process.



## SECTION 5

### Testing, Inspection and Observation Guidelines





## **SECTION 5**

### **Testing, Inspecting and Observation Guidelines**

#### **5.0 Introduction**

The Hospital Building Safety Board (HBSB), in cooperation with the Department of Health Care Access and Information (HCAI), has set out to update these Guidelines for the design, quality control, and construction of hospitals in the State. Although a TIO Program is required by code for all hospital building projects in California the use and application of this recommended Guide is voluntary. It is intended to be a guideline used by design and construction professionals involved in new and remodel hospital building projects in California and is based on the provisions in Section 7-141 of the California Administrative Code.

#### **5.1 Purpose**

The purpose of these guidelines is:

- To increase collaboration, accountability, and cooperation among those design and construction personnel responsible for new and remodel construction in California hospitals.
- To provide assistance for the efficient development and implementation of the state-required Test, Inspection, and Observation Program (TIO Program).
- To clarify the roles and responsibilities of the parties involved with the design, inspections, testing, construction, and approval of hospital building projects in California.
- To better define the testing, inspection, and observation requirements and the sequential milestones associated with projects through the course of the project development.

#### **5.2 Maintenance and Administration**

A TIO Program must be submitted with every plan review application, and an essential element of its successful implementation is the ongoing effort by the project team through the construction process. It is particularly important for the Design Professional of Record (DPOR) to keep all aspects of the HCAI-approved program current with evolving project conditions. Although these conditions will generally include tests, inspections, and milestones, they will almost certainly include information on responsible personnel as the project team members become known or as they change over the course of the project. The TIO is not a rarely referenced static program; rather, it constitutes a dynamic document that the entire project team must regularly reference as a benchmark for ongoing quality assurance.

### **5.3 Format**

HCAI has developed and published spreadsheet based TIO forms and is currently developing an online TIO application. These TIO options were developed to assist design professionals working on projects under HCAI's jurisdiction with the creation and administration of the TIO program. The HCAI developed TIO has commonly used tests and special inspections, however a design professional, depending on their project scope, may need to add additional tests and special inspections not listed. There is no code section requiring a design professional to use the HCAI developed TIO form. The design professional may design and implement their own TIO form and program.

Regardless of the preferred format, all TIO Programs should be created by design professionals who are thinking critically about the work scope and how to best preserve design intent and maintain construction quality.

### **5.4 Instruments**

Traditionally the Design Professionals of Record create and maintain TIO Programs using the standard HCAI Forms. Although this is acceptable, it may not reflect the best approach to the State's requirements because of the concentrated involvement that is required for the ongoing TIO Program implementation over the course of the project. Depending on the size and nature of the construction projects, alternate means for developing and maintaining the integrity of the construction quality may offer better solutions for achieving the objectives of the TIO Program requirements. The IOR should manage the activities that keep the TIO Program current in the field in coordination with and on behalf of the DPOR.

### **5.5 Contract Drawings**

Although including the TIO Program within the sheets of the HCAI- approved and large-format construction drawings is possible, this approach is cumbersome to maintain. Personnel, firms, tests, inspections, and milestones are dynamic because of the nature of the project. Keeping the TIO Program documentation current with dynamic conditions by changing the information on large-format construction drawings may be time consuming and does not serve the project progress. Rather, a stand- alone 8 ½ x 11 document that is approved separately from the rest of the project and can easily be transmitted to others on the team may offer a more manageable approach. Revisions to the approved TIO Program that do not change the intent of the original approved plans, specifications and/or code required tests or inspections do not constitute a material alteration as defined in the Section 7-111 of the CAC and are not required to be submitted to HCAI for review and approval as noted in Section 7-153 of the CAC but do require concurrence of the appropriate OSHPD field staff.



## 5.6 Instructions

Within the first pages of the TIO Program there should be “Instructions” to the project personnel for the proper implementation of the program. Along with clarifying the expectations for its use, the “Instructions” should clearly define the responsibilities of the project participants as they relate to the TIO Program. Instructions are optional. Although the forms HCAI-FD-303A and HCAI-FD-303B that are posted to the OSHPD website are acceptable instruments to use for the TIO Program development, they do not include instructions.

### Example 1:

#### **TESTING, INSPECTION, AND OBSERVATION PROGRAM (TIO)**

##### **INSTRUCTIONS:**

- The TIO Program is a part of the HCAI approved construction documents.
- The Design Professional of Record is responsible for the development and administration of a project specific TIO program.
- The Design Professional of Record shall coordinate with all design professionals assigned to the project to establish the scope of the testing and inspections.
- The Design Professional of Record shall be responsible for the distribution and gathering of all required Verified Compliance Reports and Test and Inspection Forms.
- A copy of the approved TIO form will be distributed upon issuance of the HCAI Building Permit.
- A copy of the approved TIO form should be kept with the approved plans at the job site throughout construction.
- A copy of the TIO program shall be maintained at the project site by the Inspector of Record (IOR) and serve as a job card throughout the course of construction.
- Certifications of all special inspectors, owner provided third party certifiers, and manufacture required certified technicians are required to be collected by the IOR.
- All design professionals, the general contractor and the project inspector of record must submit Verified Compliance Reports (VCRs), where required, at the progress milestones and observation intervals identified in this TIO program.
- When the field conditions disclose the need for additional tests, special inspections, and/or observations, the TIO program may be amended by the Design Professional of Record.
- The new amended TIO must be submitted to the office if there are Material Alterations to the approved plans, specifications, and/or code required tests or inspections.
- When an Amended Construction Document revises the scope of a project and additional tests are required, a revised TIO program will be submitted to HCAI for review and approval.
- After the tests and inspections identified on the Approved TIO form are completed, verified and accepted, it shall be submitted to the Design Professional of Record and will become part of the required project closure documentation.

## Example 2:

### TESTING, INSPECTION, AND OBSERVATION PROGRAM (TIO)

#### INSTRUCTIONS:

- The TIO Program is a part of the HCAI approved construction documents. The Design Professional of Record is responsible for the development and administration of a project specific TIO program. This includes the identification of individuals and companies performing the required tests, inspections, and observations. The Design Professional of Record shall coordinate with all design professionals assigned to the project to establish the scope of the testing and inspections. They shall coordinate with the owner, OSHPD field staff, and the entire design team to identify the critical milestones of progress and observation intervals to verify construction compliance. The Design Professional of Record shall be responsible for the distribution and gathering of all required Verified Compliance Reports and Test and Inspection Forms.
- A copy of the approved TIO form will be distributed when the building permit and IOR application have been approved by HCAI. A copy should be kept with the approved plans at the job site throughout construction. The original approved document will be maintained in the OSHPD office files. The OSHPD staff will initial the "Construction Acceptance" box in the approved TIO program as the work is completed and accepted. A copy of the TIO program shall be maintained at the project site by the Inspector of Record (IOR) and serves as a job card throughout the course of construction.
- Certifications of all special inspectors, owner provided third party certifiers, and manufacture required certified technicians are required to be collected by the IOR. Once they have been collected, they become part of the project file.
- All design professionals, the general contractor and the project inspector of record must submit Verified Compliance Reports (VCRs) at the progress milestones and observation intervals identified in this TIO program. Furthermore, each Special Inspector of (when acceptable to the office) an officer of the firm employing the Special Inspector(s) must submit Test and Special Inspection documents to the IOR and the Design Professional of Record.
- The firms and individuals assigned to perform the tests and special inspections may not be fully identified in the program. In cases where not all names have been included in the TIO program, the building permit and TIO program can be approved by HCAI with comments. Once the firms and individuals performing the tests and special inspections are identified, a revised TIO form must be submitted for field review and approval by the appropriate OSHPD field staff. OSHPD field staff will issue a Field Visit Report indicating the approval of the TIO program.
- When the field conditions disclose the need for additional tests, special inspections, and/or inspections, the TIO program may be amended by the Design Professional of Record. The new amended TIO must be submitted to the office. When an Amended Construction Document revises the scope of a project and additional tests are required, a revised TIO program will be submitted to HCAI for review and approval.
- After the Approved TIO form is initialed by the IOR and OSHPD staff, it shall be submitted to the Design Professional of Record and will become part of the required project closure documentation.

## 5.7 Responsible Personnel

Successful projects include a full complement of required personnel who are fully engaged in the process and communicate often and deliberately regarding the various TIO issues. Included within this group are owners, design professionals, inspectors, OSHPD staff, and contractors. Each of these participants and their contact information should be clearly presented in a directory on the TIO Program.

Relative to the TIO Program, each must be responsible for certain aspects of the quality assurance and controls as follows:

### Example:

St Elsewhere Memorial Sample Project HS-999999					Section A	
DIRECTORY						
Role		Name		Registration	Company	
<b>POR</b>	Professional of Record	<b>POR Sample</b>		55555	<b>PORs R US</b>	
	Porview Rd	Porterville	Ca 33333	ph 222-333-4444	fax 555-666-7777 por@tio.com	
<b>OB</b>	Owner Builder	<b>Hospital Sample</b>		55555	<b>St Elsewhere Memorial Hospital</b>	
	111 Elsewhere Ave	Elsinor	Ca 11111	ph 111-222-3333	fax 333-444-5555 hos@tio.com	
<b>CO</b>	HCAI Compliance Officer	<b>HCAI CO</b>		55555	<b>HCAI - SAC</b>	
	400 R Street, Ste 200	Sacramento	Ca 95811	ph 916-440-8300	fax 916-324-9188	
<b>DSE</b>	HCAI District Structural	<b>HCAI DSE</b>		55555	<b>HCAI - SAC</b>	
	400 R Street, Ste 200	Sacramento	Ca 95811	ph 916-440-8300	fax 916-324-9188	
<b>FLS</b>	HCAI Fire and Life Safety	<b>HCAI FLSO</b>		55555	<b>HCAI - SAC</b>	
	400 R Street, Ste 200	Sacramento	Ca 95811	ph 916-440-8300	fax 916-324-9188	
<b>IOR</b>	Inspector of Record	<b>Joe Ior</b>		A-9999	<b>IORs R US</b>	
	999 Inspection Rd	Quality City	Ca 91001	ph 999-999-9999	fax 999-888-8888 ior@tio.com	
<b>SI</b>	Special Inspector	<b>Joe Lab</b>		1234	<b>LABS R US</b>	
	Laboratory Lane	Testing City	Ca 91101	ph 999-777-1111	fax 222-333-5555 labrie@tioteamline.com	

### A. Owner

The owner is responsible for funding the TIO Program. The owner is responsible for the general oversight of the project progress and performance of all others associated with the development and implementation of the TIO Program. If the project does not require the service of a Design Professional of Record, the program should be prepared and submitted by the applicant.

### B. HCAI/OSHPD Staff

The OSHPD staff is responsible for the review and approval of the TIO Program. During construction they are responsible for the acceptance of the performance of the inspection personnel. Furthermore, they are responsible for the acceptability of

tests and inspections as verified by the Inspector of Record (IOR) and reported in Verified Compliance Reports.

### **C. Design Professional of Record**

The Design Professional of Record (DPOR) shall be responsible for the development and ongoing administration of the project specific TIO program. This includes the identification of individuals and companies performing the required tests, inspections, and observations. They shall coordinate with all design professionals assigned to the project and the IOR to establish the scope of the tests and inspections and determine which (if any) of the tests, inspections, and milestones must be observed by the HCAI field staff. The DPOR should coordinate with the owner, OSHPD staff, IOR, and the entire design team to identify the critical milestones of progress and observation intervals to verify construction compliance. Furthermore, they shall be responsible for the distribution and gathering of all required Verified Compliance Reports and Test and Special Inspection Forms.

### **D. Inspector of Record**

The DPOR, in coordination with the IOR, is responsible for the overall quality assurance of the project. The IOR is responsible for coordinating, reporting, and validating the work done by the testing laboratory, owner provided third party testing and special inspectors, and for gathering, maintaining, and validating related test and inspection documentation. Such documentation should include credentials of special inspectors, collection of HCAI Test and Special Inspection forms, and distribution of OSHPD staff field reports to the owner, contractor, and the Design Professional of Record. The IOR is responsible for validating and reporting on the installed work performed by the contractor. The contractor is responsible to submit Verified Compliance reports to the DPOR predefined progress Milestones as prescribed on the HCAI approved TIO Program and they are responsible for keeping records relative to the status of sign-off by those responsible to perform, verify, and accept the prescribed tests and inspections during construction. As outlined in the HCAI approved TIO Program, the IOR will perform all of the inspections which identify the IOR as the responsible party for the designated inspections.

### **E. Contractors**

The contractor is responsible for control of construction means, methods, techniques, sequences, and procedures, for providing a safe place to work, for constructing the project in accordance with the HCAI approved construction documents; and for controlling the quality of construction. The contractor is also responsible for providing safe access to those elements that require tests and inspections by inspectors, OSHPD staff, design professionals, and the owner. They are further responsible for submitting verified compliance reports to the Design Professional of Record at the predefined progress milestones or observation intervals as prescribed on the HCAI-approved TIO Program.

## **F. Special Inspectors**

The special inspectors are generally employed by the Testing Laboratory. They have qualifications and certifications that demonstrate experience with the types of construction in which they are certified. They must be explicitly identified in the TIO Program and are responsible for special inspections and related documentation as prescribed in the HCAI approved TIO Program.

## **G. Design Professional**

The design professionals are responsible to identify and coordinate with the DPOR in general responsible charge for all of the necessary tests and inspections within their respective design discipline. They are further responsible for conducting field visits to observe and report on conditions relative to their design specifications. Each design professional is responsible for submitting a Verified Compliance Report to the professional of record at the predefined progress milestones and observation intervals as prescribed in the HCAI approved TIO Program.

### **5.8 Tests**

The TIO Program should clearly identify the required building elements and systems to be tested for the entire project scope (Section 7-141(e) of the CAC). Each test should be properly named and referenced to the pertinent code and/or guideline. It should present a brief description of the test requirements and the discipline of construction to which it applies. The TIO Program should identify the progress status and persons responsible to perform the tests, verification that the tests were conducted in conformance with building code standards, and the acceptability of the tests results.

### **5.9 Inspections**

The TIO Program should clearly identify the required building construction processes that require special inspection (Section 7-141(g) of the CAC). Each inspection should be properly named and referenced to the pertinent code and/or guideline.

It should present a brief description of the inspection requirements and the discipline of construction to which it applies. The TIO Program should identify inspection progress status and persons responsible to perform the inspections, verify that the inspections are conducted in conformance with building code standards, and the acceptability of the special inspection process.

### **5.10 Milestones and Intervals**

The TIO Program should clearly identify all required progress Milestones and Intervals for observation throughout the duration of the construction. Each should be properly named and sequentially numbered. Each should include a brief description of the relevant elements of construction that are to be completed within it. Although the TIO Program must identify the progress status and participants responsible to submit Verified Compliance Reports at each of these progress steps, it is left to the discretion

of the DPOR whether or not assigning expected dates for reaching such Milestones is beneficial.

### **5.11 Samples**

TIO Programs that include samples of tests, inspections, observation reports, certifications, and other related documents can often further clarify the expectations for compliance with the requirements for TIO Programs.

### **5.12 TIO Modifications**

It should be clearly identifiable that the design professional has modified the document. This could be accomplished by a summary letter describing the changes and the reason by the appropriate design professional/DPOR along with a dated revision of the TIO and the delta number. This is then initialed by the appropriate OSHPD Field Staff (CO, FLSO, DSE) as having been field approved for the modification. It is not uncommon for the IOR to review this with OSHPD during the field visit. Typically, no further documents will be required of HCAI for the process of changing the TIO.

### **5.13 Approval**

The TIO Program should include an “Approval Page” that clearly documents the certification by the DPOR and the approval by HCAI. It should identify all relevant codes and any notes that will clarify its application.

### **5.14 Conclusion**

Regardless of the specific approach used to develop and maintain TIO Programs, strong leadership of the team throughout the process is of paramount importance. Leadership by the DPOR must include open communication and persistent monitoring of the TIO progress. Project quality can best be assured by teams of design, construction, and inspection professionals committed to excellence through critical thinking that is properly applied to specific conditions of the project.

## SECTION 6

Guidelines for  
Working with  
OSHDP  
Field Staff







## **SECTION 6**

### **Guidelines for Working with OSHPD Field Staff**

#### **6.0 Introduction**

After the plans and specifications for a hospital project have been approved and the building permit and approval of the Inspector of Record has been issued, HCAI's responsibility passes to the OSHPD field staff. The field observation group comprises a Regional Compliance Officer (RCO), Compliance Officers (COs), District Structural Engineers (DSEs), and the Fire and Life Safety Officers (FLSOs). This section presents a description of their duties and offers suggestions on how to develop an efficient and professional working relationship that will maximize the effectiveness of the construction process from a regulatory perspective.

The regulatory requirements and authority are specified in Chapter 7, Safety Standards for Health Facilities in the California Administrative Code (CAC).

OSHPD field staff is responsible for ensuring that hospital buildings are constructed per the approved plans and specifications. OSHPD shall make such observations that in its judgment are necessary or proper for the enforcement of the regulations and all applicable parts of Title 24.

The construction of hospitals in California is a complex and demanding process that requires effective management and cooperation of the various stakeholders involved. The needs and requirements of each stakeholder must be taken into consideration:

- Contractors may want to make changes to material specifications or change the design to improve construction efficiencies, or they may find details that cannot be constructed.
- The design team wants the project constructed in compliance with the approved documents. However, designers may tend to consider any deviations to be "means and methods," but any such deviations may be changes and require OSHPD approval (see CAN 2-107.4 Amended Construction Documents).
- The owner would like a quality building constructed on time and within budget.
- California law requires that OSHPD approval be obtained before any construction is performed.

#### **6.1 Overview of the Process**

The contractor begins construction per the approved plans and specifications. The Inspector of Record (IOR), who is the primary liaison with OSHPD, continuously inspects the construction as long as segments of work are proceeding and maintains records of the activities, as described in Section 4 of this guide. The OSHPD field staff makes scheduled and unscheduled visits to the project to observe the execution of the construction by conducting a construction site review and audit of the Testing Inspection and Observation (TIO) Program (see Section 5 of this guide) and project construction

documentation with the IOR. The regional compliance officer (RCOs) triage requested changes and either approves the changes in the approved construction documents or directs that the design professional forward the documents to the OSHPD Plan Review group for review and approval. (See Section 3 of this guide for detailed guidelines for plan review.) The DPORs make periodic visits to observe the construction to ensure work is compliant with the design.

In an ideal project, the plans and specifications would be followed exactly, the contractor would build the structure in strict compliance with the plans, the IOR would perform continuous inspection, and the OSHPD field staff would visit the project as frequently as needed. Unfortunately, there are no perfect projects. Critical elements must be managed carefully to ensure that:

- Changes are only made when they are absolutely required.
- All construction is approved by OSHPD.

Comprehensive control of all documents, including amended construction documents, inspection records, and reports, is key to the success of a project.

## **6.2 Challenges and Recommendations**

A number of potential challenges and issues may be encountered on a project. These are outlined in the following along with recommended practices.

### **A. Contractor**

Contractors will inevitably want to make changes to improve their efficiencies or because of material substitutions. Inevitably, changes are made in the field because the construction details on the plans cannot be constructed built to onsite conditions or insufficient clearances. Any changes to plans and specifications that materially alter the work require OSHPD approval prior to the execution of the work. (See Section 7-153; Addenda, Change Orders, and Instruction Bulletins, in the CAC) If unapproved changes are found during construction by the IOR or OSHPD field staff then work will be halted until appropriate approvals have been obtained.

On larger projects it may be beneficial to have the general contractor's superintendent or other project representative(s) accompany the IOR and OSHPD field staff during their scheduled walk-throughs of the construction. This allows the contractor to see how the process works and therefore better accommodate OSHPD requirements. OSHPD staff may request that they be allowed to conduct site reviews and audits with the IOR independently. OSHPD audits the performance of the IORs and it is occasionally necessary to have performance discussions with the IOR in private.

### **B. Design Team**

It is virtually impossible to prepare construction plans that are perfect; changes will inevitably be necessary. Unforeseen conditions, bid alternates, product substitution,

owner changes, defective plans and specifications, and errors or deficiencies in the construction that must be brought into code compliance will all require that the plans and specifications be changed. Changes to these documents must be approved by OSHPD staff and are documented using the OSHPD application for Amended Construction Documents.

OSHPD ACDs are changes to the construction documents that materially alter the work and are prepared by the design professional in responsible charge (DPOR). The approval process for ACDs can range from one day for field approval to several months for Plan Review team review and approval depending on size and scope. Amended construction documents shall include the change to the contract amount unless alternate methods have been approved by OSHPD for confirming construction cost changes. Construction cannot proceed until OSHPD approves the ACD.

*If unapproved changes are found during construction by the IOR or OSHPD field staff, then work will be halted until appropriate approvals have been obtained.*

The following practices are recommended for the design team:

- *Do not approve changes for convenience.* The project manager should communicate this with the contractor(s) during the preconstruction meeting. Rarely do contractor-recommended changes actually save money for the project because of the ensuing delay for the modification of the approved plans and the approval of OSHPD.
- *Avoid making changes to the approved documents.* ACDs can number into the hundreds depending on the quality of the construction documents and contractor-requested changes that are approved by the owner representative. Although the argument is often made that a change will improve the schedule and reduce cost, such is rarely the case when delays and work coordination issues are factored in.
- *Maintain a management file or logs for ACDs and NMAs that tracks the status of each and assigns responsibility for required completion.*
- *Maintain a management file for deferred submittals submitted to OSHPD that tracks the status of each and assigns responsibility for required completion.*
- *The architect should accompany the IOR and OSHPD field staff during observation of the construction work.* Many issues can be resolved immediately on site, thereby avoiding ACDs. If an ACD is required, the designer can discuss the issue with the OSHPD field staff and mutually agree upon the specific details that the ACD should address. This simple process can avoid costly delays.

## C. Owner

Project management varies from owner to owner. Some owners have staff dedicated to projects and some depend largely on consultants. Because owner changes are one of the major factors associated with project delays and associated problems, once the project permit is issued owners should resist the urge to make changes.

The following practices are recommended for the owner:

- *Examine requests for changes by owner stakeholders carefully.* Changes create project delay and increase costs. Evaluate whether any change is really needed or simply reflects a preference. Often new staff or new technology can stimulate the “need” for change by owners, but these should not be sufficient motivation. Determine whether the changes can be made later, after the project is complete. Often the cost of making changes during construction will be significantly greater than if the changes are made as a separate follow-on project.
- *Consider administrative support for the IOR program.* The IOR, the primary interface with OSHPD and the project, conducts inspections, acts as the on-site representative for OSHPD, and keeps the owner informed about progress and problems. Consequently, allocating IOR resources is one of the critical elements of success for any project. Hire competent IORs and ensure a sufficient number to serve the project. Any weakness in the IOR program will lead to project delays, contractor claims, and general chaos. The IOR is the primary interface with OSHPD and the project.
- *Include the IOR inspection program as part of the contract.* Inspections by the IOR are required by the regulations and must be performed. Establishing the inspection program early and managing it daily will facilitate coordination with OSHPD and optimize the time spent on the project by OSHPD field staff.
- *Schedule OSHPD field staff time efficiently.* OSHPD’s available time at the project site is limited. The owner, through the IORs, should ensure that priorities are established and that all parties are ready when COs, DSEs, or FLSOs are on site so that their time is efficiently utilized.
- *Follow OSHPD’s process for resolution of problems should they arise.* These processes are detailed on OSHPD’s website. The first step on any issue is to meet with the appropriate OSHPD field staff and explain the issue. Many times, the owner does not have all the pertinent details and a discussion with the appropriate OSHPD field staff could save the owner time and possible embarrassment.

Other owner-related issues are discussed in detail in Section 7 of this guide.

## D. Summary

The major challenges associated with construction project delays are the following:

- Work not executed in conformance with the approved construction documents.
- Post approval changes.
- Delays in processing deferred submittals Items (DSI) and ACD documents.

Changes will undoubtedly be required for any project but the key to success is to minimize these changes. Quality construction documents form the basis for any successful project. Keep in mind that just because OSHPD approves the documents does not mean that they are quality documents. Plans and specifications need to be completely and thoroughly checked by the responsible architect or engineer before they are submitted to OSHPD.

*Unrealistic expectations can cause difficulties and delays. OSHPD Field Staff can only perform their duties within the code requirements as stipulated in Title 24.*

Plans and specifications that are incomplete or incorrect will be returned to the applicant. (See Section 7-125 Final Review of Construction Documents, in the CAC).

Construction documents should be reviewed for constructability and appropriate changes should be made before they are submitted to OSHPD.

All construction documents (architectural, structural, mechanical, electrical, and plumbing plans) should be coordinated. Qualified consultants can take the construction plans and, using computer systems, build the systems graphically to determine whether they can be built as designed. This effort can identify problems that would otherwise not be found until construction.

The design team should be encouraged to follow the recommendations presented in Section 3 of these guidelines.

Unrealistic expectations can cause difficulties and delays. OSHPD field staff can only perform their duties within the code requirements as stipulated in Title 24. It is incumbent upon owners and owner representatives, contractors, and designers to become knowledgeable with OSHPD procedures and processes and to manage the construction project process to maximize the effectiveness of OSHPD policies and procedures.





## SECTION 7

Guidelines for  
Hospitals  
Working  
with OSHPD





## **SECTION 7**

### **Guidelines for Hospitals Working with OSHPD**

#### **7.0 Introduction**

The purpose of this section is to provide hospital chief executive officers and other hospital personnel responsible for hospital construction and renovation projects with a basic understanding of the role of the Department of Health Care Access and Information's Office of Statewide Hospital Planning and Development (OSHPD) as the building official for health care facilities and to present guidelines that can assist in ensuring that hospital projects in California are designed, reviewed, and constructed in an expeditious manner.

California hospital buildings are considered by many architects and engineers as some of the most difficult buildings in the world to construct. Very few buildings with complex mechanical, plumbing and electrical systems as hospitals are expected to continue operation following a seismic event. Unlike other buildings and occupancies, hospitals are not immediately evacuated when a fire occurs in the building, and as a result of this challenge, California hospitals are also required to meet additional fire and life safety and access compliance requirements beyond those required by other less challenging occupancies.

By their nature, and because of state law requirements, California hospital buildings take longer to design, obtain building permits, and construct and therefore are more expensive to build than non-hospital buildings or hospital buildings in other states of equivalent size. This section describes OSHPD's role in the planning, design and construction process and provides important tips and strategies that can minimize delays, reduce project costs and ensure safe buildings are constructed.

Working on a hospital construction project can be either a frustrating experience or a collaborative one and the better the construction process is understood, the simpler it is to have a successful experience. To make it a positive experience, follow these basic guidelines:

Determine if the project will benefit from Integrated Review project delivery.

- Determine if a pre-design meeting with OSHPD and CDPH Licensing and Certification staff is necessary. A pre-design meeting is required by Code for projects with a construction value of \$20 million or more.
- Require your project team to communicate with OSHPD.
- When required, submit a geotechnical report to OSHPD at least six months prior to submitting the project.
- Ensure that your design team produces quality documents. Do not let the design team submit incomplete construction documents just to maintain the delivery schedule.

- Monitor the progress of the project using the various processes and available technologies. Do not allow your design team to blame OSHPD for its own shortcomings or delays.
- Resolve conflicts by using existing appeals processes, informal and formal, when necessary.
- Ensure that your contractor adheres to the approved plans.
- Avoid owner-driven changes resulting in Amended Construction Documents (formerly referred to as Change Orders).

Proper execution of these and the other guidelines outlined in this section will ensure that a project is designed and constructed in such a way as to allow it to navigate efficiently through the OSHPD process.

## **7.1 Basic OSHPD Process**

The basic business processes of OSHPD are focused on its central mission: to assure that hospital buildings are safe. The main aspects of the process are as follows:

- Plans developed by licensed architects and engineers are submitted to OSHPD for review and approval.
- Approved plans become eligible for a building permit.
- Construction is performed by a California-licensed contractor or an owner/builder.
- All construction activities are conducted under the continuous inspection of an OSHPD-certified Hospital Inspector of Record (IOR) and is observed by OSHPD field staff.
- OSHPD field staff accepts the work as complete and certifies it is code-compliant, allowing the State Licensing and Certification agency to license the construction for healthcare patient care and operations.

As simple as it sounds, there are many opportunities for missteps along the path that can significantly escalate costs, delay occupancy, and require changes in project scope.

## **7.2 Guidelines**

To avoid the pitfalls inherent in any complex construction process, hospital owners should adopt practices in their project planning and construction delivery methods that anticipate the causes of budget, schedule, and scope impacts and prepare to resolve them proactively.

These strategies are most effective when applied during the appropriate phase of the overall project program. The phases used herein are as follows:

- Project selection and identification phase.
- Project planning phase.

- Design phase.
- Permit phase.
- Construction phase.
- Closeout phase.

### 7.3 Project Selection and Identification Phase

Whether the project is as simple as replacing a piece of equipment or as complicated as constructing an entire acute care campus, all strategies for working with OSHPD stem from how clearly and unambiguously you understand and communicate what you want to accomplish.

#### **Develop a Master Facilities Plan and Program**

Some hospitals are incurring additional expense in meeting the seismic compliance mandates because, over the years, construction and renovation projects took place without a Master Facilities Plan. In order to meet the seismic compliance mandates, some seismic-compliant buildings and systems may need to be modified or replaced while conducting seismic retrofits of noncompliant buildings. A Master Facilities Plan can assist in anticipating when a proposed project may trigger upgrades of mechanical, electrical, plumbing, and structural systems as well as assist in determining where additional sources of power are required.

The Master Facilities Plan should include all service lines provided by the facility, including outpatient services. Clinic and Outpatient Facilities. To assist hospitals in interpreting clinic building code requirements, OSHPD developed Code Application Notice (CAN) 1-7-2100 Clinics. This CAN will assist hospitals in determining which building authority has responsibility for reviewing and permitting a clinic construction project and to determine the applicable code provisions the project will need to comply with.

Some local jurisdictions, clinic owners, and design professionals have experienced confusion regarding which clinics and outpatient facilities are subject to the OSHPD 3 clinic requirements found in the California Building Standards Code (Title 24). This results in a lack of consistency in application of the appropriate code provisions and as well as uncertainty regarding the roles of the local building department and OSHPD in the plan review, certification, and construction inspection processes.

#### **Long-Term Building Planning**

The hospital seismic compliance laws provide for compliance options for nonconforming buildings. Such buildings can (a) be retrofitted; (b) be closed, demolished, or replaced; or (c) have their acute care services removed and be converted to non-acute-care use. When it is desirable to convert from general acute care to other uses, OSHPD CAN 1-6-1.4.5.1 Removal from Acute Care Services, clarifies the specific steps and processes necessary for code compliance.

## **Be Prepared to Invest the Necessary Time and Resources**

Determine if an Integrated Review team is needed for the project. This may result in higher up-front costs but can better define and stabilize overall project costs. Project cost estimates must consider building and equipment needs, inflation, project design fees, plan review schedule, and construction time. Being realistic will minimize delays that are attributed to the OSHPD review process. Develop and validate current project concept budgets, with contingencies, that align with defined scope. Value engineering should be addressed and applied during the design development phase prior to submittal of the final construction documents to OSHPD for plan review.

**Tip:** *Be realistic about the preliminary budget and length of time needed to achieve your goal.*

## **7.4 Project Planning Phase**

If a hospital owner is unsure whether a construction permit is needed, a hospital representative should check with the OSHPD Compliance Officer (CO). If construction proceeds without a permit when a permit is otherwise required, it is considered unauthorized construction (sometimes referred to as a “bootlegged project”). Unauthorized construction is a misdemeanor violation of State law and can have serious ramifications, including noncompliance with licensing requirements, validation survey citations, and noncompliance with Medicare Conditions of Participation and standards of accrediting organizations. Following a natural disaster, a damaged hospital that has unauthorized construction may not be eligible for Federal Emergency Management Agency (FEMA) assistance and reimbursement. Many problems that arise with construction projects can be traced back to unauthorized construction. OSHPD will require correction of all unauthorized construction and insist that the new work be performed under a building permit and designed to code. A penalty fee will be assessed, and review and construction oversight activities will be assessed at a Time and Material rate.

**Tip:** *Contact an OSHPD Compliance Officer to determine when a permit is needed for a remodeling project. Refer to the FREER Manual “Excluded Projects” for guidance which projects do not require a permit.*

The development of a comprehensive functional program communicates the project intent and purpose to the various regulating agencies and attests the project meets the applicable regulatory requirements for design and construction; it also confirms the project will meet the CDPH patient care and supervision standards found in Title 22. The functional program outlines the purpose of the project, provides detailed information regarding the environment of the building, operational requirements, environmental requirements, accommodations and flow, design intents, and planning and technology considerations. Refer to California Administrative Code, Section 7-119 for further details on the requirements of the functional program.

Obtaining desired outcomes require effective project management by qualified individuals who have the requisite bandwidth in their workload. Personnel assignments

can be scalable; for instance, the installation of equipment may be managed by a single staff member however, a hospital replacement project may require a team of qualified project managers. Keep in mind, the design team, equipment vendors and contractors do not have the same interests in the success and well-being of a hospital as that of its management team. Effective project management is essential to identify issues early and to minimize problems as the work proceeds through the construction process.

Consider assigning a project manager to each project submitted to OSHPD. Make sure the project manager is responsible for the overall coordination required to ensure a successful project and that all players know their roles. OSHPD experiences have identified the following potential problems related to project management:

- Some hospitals do not use project managers and expect all project participants (architect, engineers, IOR, contractor, etc.) to communicate and coordinate among themselves and with OSHPD. This coordination and communication often does not occur without a project manager.
- Some hospitals believe the IOR serves as the project manager. The IOR has a statutorily defined role which prohibits project management activities.
- On occasion, a hospital will subcontract with the architect, engineer, or contractor on a project to also serve as the project manager. These individuals have an inherent conflict of interest in serving as a project manager and may not be focusing on the owner's priorities and interests.
- In some cases, a hospital employee who has full-time responsibilities is asked to pick up project manager responsibilities under "other duties as assigned." Because of the time required to perform quality project management, this scenario does not usually work and this employee may not have sufficient training and experience in complex project management techniques.

**Tip:** *Assign project management duties to qualified people who can handle the expected workload.*

Nothing hampers the OSHPD process more than architects and engineers who do not understand the demanding requirements of California hospital design and how California hospital requirements are different from other hospitals in the United States. Architects and engineers who will be assigned to your project should be interviewed to ensure that they have previous experience and a demonstrated knowledge of California hospital design and can work constructively in the OSHPD environment. They must be licensed in California and should have had prior success with similar OSHPD projects. For large projects where it is desirable to use an out-of-state designer, owners have required that the design firm enter into a joint venture agreement with a local firm in a "Design Architect/Executive Architect" arrangement to ensure all California code requirements will be adequately addressed.

This best practice is also pertinent to selection of equipment vendors and technology systems providers.



**Tip:** Choose planning and design consultants who have a demonstrated knowledge and understanding of California Building Code regulations and of the type of project you need delivered.

The design team must be knowledgeable about the unique OSHPD procedures and processes and have a firm understanding of Title 24 as it pertains to health facilities construction.

Check references for architects and engineers.

- References are needed for both the architecture and engineering firms and for the individuals who will perform the work. Interview the specific design team individuals proposed for your project.
- Review recent similar projects that the firms have submitted to OSHPD to determine the quality of their work and the firm's ability to design to code (e.g., look at type of OSHPD comments and number of backchecks) are appropriate for complex building design.
- Require the design professionals to perform written code reviews by qualified internal staff or a qualified outside code consultant, particularly fire and life safety provisions.
- The hospital should obtain an independent peer review of the architectural and/or engineering plans prior to submitting them to OSHPD.

Although this entails additional up-fronts costs, it can ultimately save both time and money. It will enhance quality design, facilitate a quicker plan review, and help to identify the cause of any delays that may occur during the plan review process. This is a natural component of Integrated Review process.

- Select a design team based on factors other than just a presentation by a firm's marketing representative.
- If any team members working on your project leave the design team during your project, stipulate in your contract that the replacement will have similar design and OSHPD experience and that the hospital owner has final sign-off on replacement personnel being assigned to your project.

**Tip:** Require that the architect and/or engineer contract contain a provision of the basic services and code-compliant drawings to ensure there are no extra charges for backchecks; and ensure that the hospital will receive timely copies of OSHPD's plan review comments.

OSHPD has jurisdiction over all construction in healthcare buildings as well as certain aspects outside of it, however OSHPD is usually not the only public agency involved given the nature of your project. All construction that adds floor area to your hospital will require some level of review by your local planning department for a California Environmental Quality Act (CEQA) and land use review, and it is possible that multiple



jurisdictions may be involved. All projects should, naturally, be completed with the ultimate goal of achieving licensure by the California Department of Public Health.

Determine the entire breadth of regulatory oversight with your design and legal consultants before undertaking your project. Incorporate the time required for all reviews, approvals and permits when planning the project schedule.

### **Land Use Approvals and CEQA**

Land in California is typically not zoned for hospital use. New hospitals and additions to existing facilities must undergo a local jurisdiction review and approval process intended to create an entitlement to build a new hospital building. The local planning department will review your application to determine what local approvals might be required. The entitlement process often takes longer than the OSHPD plan review and permitting process, and as such, may become the critical path toward commencement of construction. Because of the complexity of entitlement issues, many hospitals will retain a qualified land use attorney with experience working with the jurisdiction in question.

***Tip: Develop a full understanding of the regulatory environment that affects your project.***

At a minimum, the local planning department will review your land use application to determine consistency with adopted general or specific development plans that include the property in question to determine what modifications to those documents might be necessary to support the proposed project. The planning department is also responsible for environmental review under CEQA. A preliminary review will be conducted to determine the potential effects to the environment. The initial review may result in a declaration that there are no impacts (“Negative Declaration”); that impacts can be reduced to nothing by requiring the project to undertake prescribed mitigations (“Mitigated Negative Declaration”); or that the project may have significant impacts that require a full or partial Environmental Impact Report (EIR).

Development, review and approval of an EIR is a public process under the control of the local planning department and is intended to give the public opportunity to raise concerns about the project and its potential impact. A draft EIR (DEIR) is prepared and published with a comment period deemed long enough by the local jurisdiction to ensure all concerned persons and organizations have a chance to comment. Comments and their responses are published in a final EIR (FEIR), the findings of which must be approved by the local jurisdiction along with any modifications to urban plans and a development agreement (if required). Because this is a discretionary land use issue, there is no guarantee that a proposed project will be approved to proceed to construction. Once approved, the local jurisdiction issues a Notice of Determination (NOD) which serves as the proof of entitlement to be provided to OSHPD and other permitting entities. The NOD is required by the local building department to release local permits as well.

## Other Permitting Entities

Many locations in California have multiple layers of government which may have permitting authority. Some locales have special school tax fees that must be paid prior to the issuance of a building permit. There may also be local air quality management districts that issue asbestos abatement and emergency generator permits. The local planning department or your legal counsel should assist you in determining which additional government bodies have influence over your project.

## California Department of Public Health (CDPH)

Prior to commencement of healthcare operations of a new or remodeled facility, CDPH will survey the facility to evaluate the operational practices and readiness of the facility and staff following field acceptance by OSHPD. While this is fundamentally a step undertaken at project closeout, it is essential that the hospital have a plan in place during the project planning phase, the design phase and the construction phase to ensure that the survey will be successful. Any service that the hospital intends to offer in a new or innovative way should be reviewed with the local CDPH office prior to design to reduce the likelihood of rejection following completion of construction.

**Tip:** *The CDPH licensing application process cannot start until a Certificate of Substantial Compliance, a Construction Final report, or Certificate of Occupancy has been issued by the OSHPD Compliance Officer and included in the application package. Be sure to plan sufficient time in the construction schedule for transition planning, activation, and licensing.*

**Tip:** *For projects under review by CDPH, a Construction Final report should be postponed until after licensing is completed. If CDPH finds any deficiencies, the issue can be resolved via ACD rather than having to submit a new project through OSHPD.*

Use your staff and consultants to fully define all of the project's standard and unique characteristics. Understand the type of approval required and the documentation needed for CDPH evaluation. Adding, deleting, or changing services will invariably add cost and time.

**Tip:** *Determine your project scope and phasing.*

Owners should maintain awareness and control of the construction process throughout the length of the project. The manner in which the work is contracted should reflect the nature of the work and business approach of the owner. There are three fundamental contracting modes with ample variation between them. Select the one that's right for you.

## Design-Bid-Build

Considered the traditional model of construction contracting, the design- bid-build model relies on design professionals who develop plans that are intended to guide the work of the contractor. The "design-intent" documents are less than complete, leaving many design decisions up to the bidding contractor to give them as much flexibility to determine means and methods and ultimately the bid price. Long thought to be the

method that assures lowest cost, many owners have discovered that bids only cover what is shown on the bid set, opening the door for multiple amended construction documents that are really completion of the initial design at a cost higher than the bid.

Public entities are usually required to use the design-bid-build method but the risk of cost overruns using this method is causing some owners to rethink its use. OSHPD only reviews plans for code compliance, not constructability or good design. The design-bid-build method poses particular challenges for the OSHPD project due to its requirement that every element going into the construction of an OSHPD building that “materially alters” the work must be reviewed and approved prior to installation; this requirement is the primary barrier to continuous construction where the contractor is building from “design-intent” drawings that the contractor is completing design of in the field.

### **Design-Build**

In this model, a contractor is hired to construct from plans that the contractor has taken responsibility for developing. The owner sets forth the requirements and the conditions of satisfaction, but the contractor has the ultimate authority to determine how they are to be fulfilled. The design-build method produces a much higher level of certainty for adherence to budget but may not produce as satisfactory a result due to the extent the owner gives up control of design. Although design-build has many useful applications, it works to particular benefit for an OSHPD project focused on specific types of engineering systems. This approach requires a sophisticated, engaged owner. The owner must clearly define the project scope, specifications, and design intent up front.

### **Integrated Project Delivery**

An Integrated Project Delivery Team (IPD) project is one in which all major design disciplines, the general contractor, and trade partners are selected at the beginning of the project to work as a team. In a typical IPD contract, all major parties work from an open book and put their profit at risk, thereby ensuring that the success of the individual team member relies on the success of the team as a whole. The IPD team simultaneously designs the building and how it is going to be built, thereby minimizing amended construction documents and substantially improving adherence to budget. The time to initial permit may be longer than a traditional design-bid-build project but can be reviewed by OSHPD with a greater certainty of constructability.

While IPDs are becoming a more popular approach to major construction, it represents a totally new way to develop facilities. This approach works best where the owner is committed to a specific scope for the project that is not expected to vary. Some contractors are moving aggressively in the direction of heightened collaboration while others find it not to their liking. The owner who is seeking the control of the design and function of the built space along with the greater reliability of adherence to budget may still find it difficult to adopt IPD due to the large upfront investment in having the full project team engaged from the very beginning. However, more owners have embraced IPD in recent years because of the substantially greater likelihood of having the project come in on time and budget without sacrifice to program from unanticipated budget adjustments that result in “value engineering,” a process resulting in major redesign of

architecture and engineering systems late in the design phase used to bring projects back into budget and/or schedule.

**OSHPD maintains several different approaches to review and permitting, many of which may be selected by the project proponent.** Project applications that do not specify a particular approach will be reviewed as a standard project: permits for new construction and remodel projects that alter the existing structural frame (also known as “H” projects) and permits for new construction that do not alter the existing structural frame (also known as “S” projects). OSHPD maintains standard turnaround targets for these types of projects. OSHPD offers a “preliminary” review process for these projects to look at major code issues prior to completion of construction documents. OSHPD also offers a program where limits of work can be agreed upon prior to permitting. Refer to CAN 2-102.6 – Remodel, for remodel/renovation projects.

Additional automatic and optional plan review programs include:

- **Annual Permit** – covers up to \$50,000 in very small work on an annual basis.
- **AB 2632 Project** – supports certain types of maintenance and repair work for single story buildings.
- **SB 1838 Project** – under \$50,000. An owner can select the SB 1838 application for work under \$50,000 excluding the cost of fixed equipment. Projects using SB 1838 are not plan reviewed; they are triaged to ensure eligibility for the program followed by issuance of a permit. The SB 1838 permit is intended to expedite commencement of construction for very small projects; the risk to use this method comes from the potential to construct something to a non-code conforming condition which may require correction in later work.
- **Incremental Projects** – new construction and remodel projects that alter the existing structural frame (also known as “H” projects) may be separated into two or more permit sets by applying for it to be an Incremental (also known as “I”) project instead.

Each increment of these types of projects must represent one or more complete building systems. The incremental project method is typically chosen for large projects to allow for some portion of work to commence while other portions continue through the plan review process. The project proponent must request use of the incremental project; OSHPD will determine whether the proposal meets the requirement of code and is separated into appropriate increment packages.

- **Phased Plan Review (PPR)** – established by Senate Bill 306 (Chapter 642, Statutes of 2007), PPR is a voluntary review process that must be proposed by the project proponent and approved by OSHPD prior to engagement.

OSHPD is not obligated to accept any project for phased plan review. PPR functions as a method to resolve all code issues prior to development of construction documents, assuring their highest possible quality. PPR works well with new construction and remodel projects that alter the existing structural frame

(also known as “H” or “I” projects); project teams using Integrated Project Delivery (IPD) methods will see PPR as a way of ensuring conforming design at the earliest possible opportunity during design phase to eliminate waste or rework.

Use your management staff and consultants to determine whether what you want to do can be accomplished. The following sub strategies are needed to ensure feasibility:

**Tip:** *Select the project approach and organization that is appropriate for the nature of the project and the hospital’s preferred construction contracting method.*

**Determine whether there are physical limitations that will prevent achieving your intended outcome.** There are limits to the built environment that can make a project infeasible. Physical feasibility may also be affected by existing conditions of the target location or by adjacent conditions. In applying regulations, OSHPD can require changes that either increase cost or result in project abandonment if physical feasibility is not properly evaluated. Accurate as-built drawings and physical evaluation of existing conditions are essential in determining feasibility for remodel or addition projects. Drawings should include all disciplines (e.g., architectural, electrical, mechanical, and plumbing).

**Determine the financial feasibility of the project.** Whether you start with a target budget or target outcome, make certain that the total project budget and the scope of the project match. Careful planning at this stage of the process is the most important determinant of project success. Inaccurate or unrealistic budgets are the most common drivers of change throughout the project duration. Any corresponding changes in the scope of the project must be addressed in the project’s budget. Distinguish between the budget and construction costs. Make sure adequate contingencies are defined to accommodate unforeseen hospital impacts.

**Tip:** *Determine whether your project is feasible.*

## 7.5 Design Phase

**Require that your design team of architects and engineers design to the current California Building Code.** Experience has shown that there are common problems arising from design that seriously impact the satisfactory completion of the OSHPD process. These include:

- Designing to a code other than the appropriate provisions of Title 24.
- Designing to out-of-date codes.
- Using room designations or other nomenclature on plans that are not consistent with Title 24.
- Failure to make best use of PINs, CANs, FAQs (Frequently Asked Questions, and reminder lists) published by OSHPD.

- Failure to follow the CAN 2-102.6 Remodel, which provides flow diagrams for use in planning the scope and boundaries of remodel projects.
- Failure to accurately identify and implement into plan development, the existing facility building as built conditions.
- Failure to incorporate the manufacturer installation requirements into your permitted plan.

A foundational design goal of any hospital project should be to provide flexibility to change. With the length of time necessary to implement hospital projects in California and the quick evolution of technology, potential changes/reactions from healthcare reform, changes in future workloads (increased or decreased) and evolution of models of care, building designs need to build in flexibility in as many ways as possible to help address necessary modifications to the building as planned.

A few of the best methods to accomplish this important goal is the inclusion of shell or unassigned space, the use of a “universal” structural grid, the planning in of soft functions around critical departments for future expansion, utilization of standard size rooms, and consideration of adaptable rooms. These should not be afterthoughts in the project or only part of a value engineering effort but carefully integrated as part of the planning process.

There are varying degrees of shelling (cold shell, warm shell, built out but not equipped, etc.) as well as different opinions on what is soft space vs critical but the point is clear – plan into the project ways to adapt and adjust to the unknown changes in the future. If considering standardizing or multi use rooms, ensure that the size is inclusive of all the potential uses – exam rooms that can be easily converted to minor procedure rooms, or medical/surgical patient rooms that can be easily modified to ICU. Ensure that the infrastructure to support future build outs of shell or conversion of soft space or adapting rooms to higher functionality is built into the project (air changes, filtration, code requirements, etc.).

Another creative variation is to fully design and permit the project knowing that you may shell some of the building. Develop a shelling strategy, which could be implemented either as an alternate approved design or as an amended construction document. Design of systems should be planned to accommodate this plan.

As a peripheral perspective, sustainable design and disaster planning need to be considered in designing flexibility into a hospital. Facilities currently in design in California need to meet the 2030 Energy Challenge mandate. Health facilities will continue to be challenged by constantly changing industry environmental standards. Planning for various threats (man-made or acts of God) requires careful infrastructure design considerations. Facilities must consider these threats as part of their overall infrastructure strategy. These events may be unique with unusual risk factors such as major earthquake, wildfires, chemical, radiation and biological attacks, or unique to healthcare such as pandemic flu. In either case, facility infrastructure must be designed with consideration to these risk factors. Design interventions range from providing



ED/inpatient bed surge capacity, mechanically isolating areas of the building, creating major outdoor triage/decontamination spaces, accommodating additional staff, etc.

**Tip:** *Build in flexibility for change.*

Some projects require geotechnical reports except as noted in CAC, Section 7-117 and CBC, Section 1603A. Approval for a geotechnical report takes a long time. Owners should plan for this and submit the report at least six months ahead of the preliminary submittal.

OSHPD believes the key to receiving approved geotechnical and engineering geologic reports in a timely manner is to use experienced firms and to submit the reports early in the process. Consequently, the geotechnical report for the selected project site should be submitted prior to the preliminary review if possible. The approved report will establish the foundation and structural design criteria necessary for the structural engineer to design preliminary submittal data.

**Tip:** *Submit a geotechnical report, when needed, in a timely manner.*

OSHPD expects the licensed design professional to know and follow the code in the preparation of design. The code itself is somewhat flexible and open to interpretation. When designers have questions or require clarity as to the meaning of specific code issues, or need validation of their interpretation, they are encouraged to seek clarifications through the various channels OSHPD provides.

- The designer may contact the Building Standards Unit for clarification of specific aspects of the code to determine their applicability.
- Design teams may present concepts to a regional plan review staff on an appointment basis in pre-application conferences to validate specific design issues or to clarify project scope.
- Design teams should clarify which aspects of their design may not adhere to the specifics of the code. These issues include:
  - Alternate means of compliance for architectural, electrical, mechanical, and structural conditions.
  - Alternate methods of protection for fire and life safety issues. And
  - Program flexibility, which affects the relationship between architecture codes and the specific needs of different care delivery models.
- The resources of the Seismic Compliance Unit can be used to ensure that the designer understands his or her obligations under the Seismic Safety Act and is including the scope needed in the project to further compliance needs.
- Plans can be submitted for a preliminary review by OSHPD.

The purpose of the preliminary review is to obtain written comments that validate or correct the basics of the architectural and fire and life safety elements of design. A



preliminary review can mitigate potentially gross errors in the documents submitted for permitting. To get the most out of the process, plans should be submitted at about the 50 percent Design Development (DD) stage. Architects and engineers should sequence for the intended results. OSHPD preliminary review comments should be included by the architect or engineer at the end of the DD phase and the comments can then be incorporated into the construction documents.

The preliminary review submittal date will also fix the date of applicable codes to which the project will be designed.

***Tip: Ensure OSHPD is contacted for interpretation or clarification of all code issues that are not clear.***

OSHPD allows larger new construction projects to have complete phases of construction broken out into incremental submittals for permitting. Typical incremental submittals might be foundations and structure in one package and the building skin and interior build-out in a second package. Incremental project permits can sometimes allow for an earlier start to new construction than would occur if a permit for the entire building had to be obtained first. The decision for increment submittals should be included in preliminary submittals. However, although incremental submittals may reduce time frames, they may also add cost and complexity.

***Tip: Determine during the design process whether you want to have early permits for portions of the work.***

Once construction documents are completed, adding, deleting, or changing programs and services will add cost and result in delays because OSHPD will need to review the program again. A hospital gains the maximum benefit of OSHPD services prior to completion of construction documents. Obtain all design development sign-offs before producing the construction documents. Upon completion of documents, an independent plan reviewer should be retained to ensure the design meets code and to minimize the number of OSHPD backchecks.

***Tip: Begin production of the construction documents only upon receipt of design development sign-offs.***

Designers in California sometimes ask OSHPD to allow the submittal of designs for various building systems to be delayed until after the project has been approved and permitted. Deferrals are requested by the design team and it is up to OSHPD to determine whether they will be granted. At one time, it was seen as a courtesy to the design team to allow deferred submittals; however, this practice has led to designs that are poorly coordinated. Review of deferred approval applications can take as long as the review for the initial application and can cause delays if not managed properly. Modern design management supports early coordination of all building elements to be designed together. Insist on there being no deferred submittals that cannot be otherwise avoided.

Deferred submittals may be used by hospitals for large or technologically- sensitive pieces of clinical equipment when there will be long periods of time between design and installation. Because in a new hospital five years may elapse between preparation of construction documents and the completion of construction, use of the deferred approval method will allow the hospital owner to select the most current technology for installation without having to change a prior design. A hospital owner must recognize that some deferred submittals are common unless a subcontractor or manufacturer has been selected early enough to incorporate the necessary details and calculations into the OSHPD submittal documents.

***Tip: Avoid Deferred Submittals.***

### **Deferred Submittals - Clinical Equipment**

Clinical Equipment (CTs, MRI, PETs, etc.) presents a unique challenge to owners and designers. Medical staff wants the latest technology when procuring large expensive clinical equipment, so it is in their interest to delay the selection and procurement of the equipment as long as possible. Designers need the specifications of the equipment and the design assistance from the manufacturer to design the room to support the physical requirements (electrical, mechanical, plumbing, space needs, etc.) of the equipment. Clinical equipment manufacturers work with the project designers to provide a floor plan for approval by the owner, this floor plan is the basis of design for the equipment installation and operation.

Typically, large hospital projects are designed in increments. Increment 1 would be foundation and steel, Increment 2 would be the build out of the floors, Increment 3 clinical equipment, etc. Increment 1 and Increment 2 plans would include designed shelled space for the clinical equipment. This space should be labeled on the plans for the intended future use. Increment submittals should be submitted up front. This will assist OSHPD plan reviewers and improve plan review turnaround time.

Determining the schedule for the selection and delivery/installation of the equipment is a collaborative effort by the owner and the design team. One effective method is to use the project schedule to determine the date of beneficial occupancy and then work back. The manufacturer has installation and testing schedule requirements, the design team can provide the schedule requirements for design, OSHPD and construction. With this information, a procurement schedule can be developed.

Designers should design the “shell space” large enough to accommodate any manufacturers’ clinical equipment of the type needed. The mechanical, electrical and plumbing (MEP) systems should be sized accordingly to meet equipment needs. Some owners require the designers to increase MEP system’s capacity by 10% to 20% to ensure future changes to technology can be accommodated.

## **Deferred Submittals -Low Voltage (Information Technologies/Information Services) Design**

As with the clinical equipment issues addressed in clinical equipment above, low voltage design requires special attention. These systems are complex, unique and rapidly changing and require a designer with the necessary specialized knowledge and experience. The owner should require that the architectural and engineering team include a low voltage design engineer, or the owner can assign a low voltage design professional that knows the facility and can make decisions for the owner.

The design team should work in collaboration with the hospital's Information Technology/Information Services (IT/IS) staff to develop the basis of design (systems, capacities, technology, HVAC requirements, future growth, etc.) and to review the construction drawings as they progress. One of the first issues that should be resolved is the project's responsibilities versus IT/IS's responsibilities. Many IT/IS departments have a select number of low voltage contractors that they have confidence in and with which they work on a regular basis. This may work satisfactory for small IT/IS projects but could be a significant issue for larger projects.

Other team members to include are the Clinical Informatics Nurse to ensure that the clinical needs of the systems are being addressed, as well as the Clinical Engineering Department (Bio-Med) to ensure that all cabling and power needs are being addressed for the clinical equipment and systems that must be linked to the network. It must be noted that many building systems run on the Owner's network. Systems such as pneumatic tube, building management systems, lighting controls, etc. Require capacity from the overall system. It must also be noted that many building infrastructure systems work on the IT/IS cabling network. Building Management Systems (BMS), pneumatic tube systems, etc. all reside on the permanent systems.

Due to the overall coordination and installation responsibilities of multiple trades, experience has proven that the best approach is to have the project construction team responsible for installing everything including the finished wall, ceiling, floor and equipment racks and mounting. IT/IS would then be responsible for the installation of IT/IS equipment and operational testing. IT/IS installation and testing should be included in the owner's project schedule as it will impact beneficial occupancy.

It is becoming more apparent to the healthcare industry that IT systems are complex. Because of the multi-disciplines that are needed to design the IT infrastructure, it is highly recommended that facilities construction be the hospital lead for such projects due to their experience with central plant infrastructure systems for both hospital buildings and the campus.

Design professionals are customarily responsible for preparing the OSHPD plan review application. However, mistakes are frequently made. The hospital representative should review the application to ensure that:

- The right forms and all applicable forms are used and are completed correctly and thoroughly as well as signed by the appropriate parties (e.g., projects with incremental submittals and permits will require a special form).

- An appropriate hospital official with adequate OSHPD knowledge is named as the facility representative (who will receive copies of OSHPD correspondence that would otherwise go only to the designers).
- The boxes on the form describe how this work furthers fulfillment of your SB 1953 Compliance Plan (although almost all work does, most goes uncredited).
- The hospital owner will pay 1.64% of construction costs (excluding designer's fees and other "soft" costs) to OSHPD as their fee for service. If a Phased Plan Review is chosen, the fee is 1.95%.
- OSHPD has deemed the plan complete owing to no defects or omissions.

An applicant is expected to be as accurate as possible in estimating construction costs and there will be adjustments made at the end of the project. Please refer to Code Application Notice 1-7-133(k) on OSHPD's website for more comprehensive information about fees.

**Tip:** *Ensure that the application for plan review is complete.*

## 7.6 Permit Phase

Plan review follows a predictable course through the OSHPD process. Documents submitted are triaged by OSHPD plan review staff for completeness and are accepted or sent back. Once completed, the documents are returned as approved documents or with comments that must be corrected before they can be approved. Revised documents are submitted for additional review called a backcheck. The backcheck cycle repeats until the plans can be approved. OSHPD sets target durations for each phase of review.

Hospital leadership should closely monitor the progress of the plan review process:

- Receive an explanation from the design team if drawings are returned by OSHPD during triage.
- The hospital project manager should track OSHPD performance during review cycles to maintain an understanding of the status of the plan review.

All OSHPD plan reviews can be observed in real time using the OSHPD website. Concerns over missed target dates should be raised with your design team and ask them to seek clarification from OSHPD plan review managers.

- Monitor the passage of time between the date that OSHPD releases drawings with comments to be corrected and the date that your design team resubmits.

Do not blame OSHPD for a slow "turnaround" by the designers. Projects that take longer than ninety (90) days in turnaround waste the hospital's resources and could result in being treated by OSHPD as abandoned projects.

- Keep track of the number of review cycles.

Three cycles are not unusual: first review and two backchecks. Continued comments by OSHPD plan review staff after the second backcheck may be an indication of a problem with design or inappropriate response to OSHPD comments by the design team. Hold your design team accountable for the satisfactory outcome of the OSHPD process.

- Request the design team to provide complete schedules with committed response times and a list of critical issues requiring hospital input as well as dates required for hospital data to be provided so that the data can be completely integrated into the documents.

OSHPD has developed a project review time calculator which can be used to establish reasonable time frames for the initial review and any backchecks. OSHPD will want to schedule a meeting of interested parties if there are still plan review comments after two backchecks. More than two backchecks indicates that there are problems with the project and hospital owners would want to schedule such a meeting as quickly as possible.

All documents sent to OSHPD are triaged. Any document that can be handled in less than a half hour is acted upon immediately. OSHPD uses over-the-counter review for projects that do not require more than two hours for structural review and no more than one hour of review for other disciplines.

OSHPD lists the status of each project on its website. A hospital owner or representative can reach the website using the hospital's facility number or the project number. This tracking system can be used by the hospital leadership to track the status of a project.

OSHPD reports that the chief reasons for project delays are the following:

- Defects or omissions in plans.
- Failure to promptly reply to OSHPD plan review comments.
- Project changes during the review process
- Project changes during construction.

Although a project is complete and a building permit is issued, an Amended Construction Document can result in a delay of a project during construction. On a number of occasions, OSHPD has observed a contractor informing a hospital representative that considerable money can be saved during construction using an alternate means. What the owner is not told is that many times the alternate means can hold up construction while it is plan reviewed and the delay costs may be more than the savings from using the alternate means. It is essential that hospital representatives understand that code is minimal. On some occasions, designers may attempt to use an alternate means to achieve less than code. Any alternate means must be equivalent or greater than code.

***Tip: Keep track of the plan review process through OSHPD.***

OSHPD forms change from time to time. To make sure you are using the most current form, obtain it off the OSHPD website. Using an outdated form could result in a delay.

***Tip: Obtain all needed OSHPD forms from the OSHPD website to ensure they are current.***

Construction must start within one year of plan approval. Failure to do so will cause the permit to expire and with it the approval of the plans. Prior to a building permit lapsing, an extension can be requested. Once a permit is allowed to lapse, proceeding with the project entails starting the OSHPD process from the beginning. If the building codes have been revised in the meanwhile, the design process must be based on the new code.

***Tip: Never let your permit lapse.***

### **Infection Control Risk Assessment (ICRA)**

Prior to initiating construction in a healthcare setting, an ICRA should be completed to determine the environmental risks and mitigation efforts to keep the environment safe due to construction activity. ICRA parameters are designed into the construction documents by the design professionals of record (DPOR) and built/maintained by the construction crew throughout the duration of the project. The ICRA is used to help reduce the infection risk during construction and can help identify potential risk to the healthcare environment.

### **The ICRA Process**

The ICRA process is a proactive and integrated process for planning, design, construction, and commissioning activities. A team of experts from organization develop analyze and approve the ICRA. This team is a collaborative team of various departments within the hospital from Infection Prevention, Clinical, Quality, and frontline caregivers along with Facilities management. As a team, the ICRA is developed by using the health risk assessment tools within the Facilities Guidelines Institute (FGI). The outcome of the ICRA risk assessment can then be passed down to the contractor and monitored via the ICRA team for strict adherence to the level of containment needed depending on the risk level within the environment the project is in.

**ICRA During Design:** During design, the DPOR addresses standards as required for airborne isolation/protective equipment rooms, airborne isolation rooms, special HVAC needs, water and plumbing systems and materials for surface and furnishings.

**ICRA During Construction:** Consider the risks associated with construction in the healthcare environment. Debris compromising the environment, particulates and airborne microbes being introduced into the hospital ventilation systems. Water stagnation and contamination and transporting of waste and construction debris.

**Pre-Construction Risk Assessment (PCRA):** Before any construction starts, a PCRA must be completed to help identify the overall risks associated with said activity and identify the measures the contractor will need to follow. As a rule, the PCRA focuses on



both the systems within the hospital and how the construction-related activity may disturb patient safety. As with the ICRA, the PCRA should be developed by representatives from hospital safety staff, contractor, maintenance, Infection Control, and Quality.

The team develops the assessment-based walk through of the proposed project area and evaluating the surrounding areas on the same floor as well as below and above. The assessment should be based on key criteria as identified during the walk.

- Noise generated from the project.
- Vibration.
- Emergency procedures.
- Fire alarm and security systems.
- Utility disruption.
- Shutdown notifications.
- Hazardous material remediation.
- Impact on Fire alarm and Fire suppression systems.
- Firewalls or door assemblies compromised.
- Impacts to adjacent areas.
- Hot work impacts (welding, grinding).

With the assessment complete and approved by the facility, the ICRA, PCRA, and ILSM should be posted at the job site and saved as part of the project documents. Throughout the course of the project the construction activity can be monitored and inspected to ensure compliance is kept to the standards set forth by the parameters identified. Contractor and staff training are also required as part of the ICRA, PCRA, and ILSM. This training educates not only the contractors on the specifics of the ICRA, PCRA, and ILSM but also ensures that staff are kept aware of the environment ensuring occupant's safety.

### **Interim Life Safety Measures (ILSM)**

ILSM's have been identified by accrediting agencies and the National Fire Protection Association to compensate for hazards caused by Life Safety Code deficiencies or construction activity. Healthcare facilities in general apply Interim Life Safety Measures to ensure the safety of all staff, patients, and visitors. These measures include clear pathways to egress points, fire protection systems, exit signage, and smoke barriers. As with the ICRA and PCRA, the ILSM should be developed by representatives from hospital safety staff, contractor, maintenance, Infection Control, and Quality.



With construction projects, general renovation or extensive maintenance potentially impacting the environment, new ILSM measures need to be implemented to ensure operation safety for patients, staff, and visitors. ILSM assessments must be performed on any system or element that could create a life safety code deficiency. Among the questions that should be asked as part of this process are:

- Will any egress pathways or exits be altered or obstructed?
- Will access to emergency services and for emergency responders be impaired, restricted, or rerouted?
- Will any fire detection or alarm systems be impaired?
- Will any part of the fire suppression or sprinkler system be impaired?
- Will any smoke/firewalls, doors, or assemblies be compromised?
- Will the fire safety of personnel in adjacent areas be affected?
- Will it be necessary to install temporary construction partitions?
- Will the project result in the accumulation of debris and/or materials and increase the combustible load in the work area?
- Will the project activity include significant ignition sources (e.g. cutting, welding, soldering, or other activities involving an open flame)?
- Will the project activity present any other safety-related hazards?

**Tip:** During the project review phase, establish the criteria for ICRA, PCRA, and ILSM to be used during construction.

### **Comment and Process Review**

The decision of OSHPD plan review and field staff as it relates to interpretation of Title 24 may be appealed by a hospital or its design team or contractors if it is felt that the interpretation is in error. There are both informal and formal processes for appeals, each with its own timing and mechanisms. The Comment and Process Review (CPR) mechanism is established by OSHPD as a method for a hospital owner or its consultants to have persons of increasing authority review code interpretations made by first-line plan reviewers and field personnel. This informal process is as follows:

#### **Step 1: Review with the Comment Originator**

The plan review staff and field staff are responsible for rendering judgments regarding applicability of the building code. If the hospital or design team object to an interpretation of the code as expressed through the comments made by OSHPD staff, the first step of the process is to discuss the difference of opinion with the staff person who originated the interpretation. This allows for disputes to be resolved at the lowest level.

### **Step 2: Appeal to the Supervisor**

If the matter is not resolved satisfactorily with the staff member, the issue may be appealed to the Regional Supervisor or the Regional Compliance Officer who supervises the originator of the code interpretation. The supervisor may uphold, overturn, or modify the interpretation as is determined to be appropriate. The supervisor's ruling then becomes effective.

### **Step 3: Appeal to the Division Chief**

If the matter is not resolved satisfactorily with the supervisor, the issue may be appealed to the Division Chief over the region involved in the dispute. The Division Chief may uphold, overturn, or modify the interpretation and may seek guidance from other supervisory personnel who serve as subject-matter experts over the disciplines in question or from other OSHPD staff as appropriate. The decision of the Division Chief marks the end of the informal appeal process.

## **Hospital Building Safety Board**

Once the informal process has been exhausted, the issue may enter the formal appeal process by being submitted for judgment to the Hospital Building Safety Board (HBSB). The HBSB, a statutory body appointed by the HCAI Director, serves two purposes:

- To advise the Director of HCAI on the administration of the Hospital Facilities Seismic Safety Act.
- To act as a board of appeals with regard to any actions taken by HCAI related to hospital facilities and any other action taken by OSHPD; including SB 90 appeals and disciplinary action taken against an IOR.

The hearing process is a formal action of the state of California and the outcome is binding. If the appellant has been adversely affected by the decision of the HBSB, the appellant may further appeal the issue for resolution by the California Building Standards Commission (Health & Safety Code Section 18945).

## **Considerations for Appeals**

Applicants have an undisputed right to appeal without retaliation. Before engaging in appeals, the hospital owner should consider the following points:

- *Ensure that your professional design consultant or contractor has a winning argument.* Codes can be open to interpretation and OSHPD's orientation of interpretation is toward the greatest degree of safety. Be ready to show that the code unambiguously allows the design being proposed and that the application of code does not reduce safety.
- *Ensure that your project can endure the time it takes to appeal a comment.* The informal CPR process is intended to be fairly quick, whereas the formal HBSB process can take up to a year for resolution. Projects in the plan review stage can often pursue the CPR process but may be set back substantially by an HBSB appeal. However, PIN 47 provides for an expedited HBSB appeals process.

**Tip:** Use established channels in resolving disputes with OSHPD.

## 7.7 Construction Phase

The California Building Standards Administrative Code requires that all hospital construction be observed continuously by an OSHPD-certified IOR. The IOR is selected and hired by the hospital owner.

An OSHPD-certified IOR is required to perform inspection of all alterations, modifications, and additions to existing hospital buildings and new hospital facility construction. OSHPD certifies inspectors for three levels of inspection defined as follows:

- Class A IORs may inspect all phases of construction, including architectural, mechanical, electrical, fire and life safety, and structural elements. Note that this class includes major structural construction.
- Class B IORs may inspect only the following phases of construction: architectural, mechanical, electrical, fire and life safety, and anchorage of nonstructural elements.
- Class C IORs may inspect only specific disciplines of construction defined in regulations.

See Section 4 of this guide for a comprehensive review of IOR roles and responsibilities. Depending on the size and complexity of a project, more than one IOR may be necessary to avoid construction delays. The owner should ensure that the inspection process does not become the critical path during construction, by providing competent adequate inspection including the number of inspectors needed to perform timely inspections.

Prior to retaining an IOR, references should be checked with hospitals and architects who worked on projects with the IOR. The prospective IOR should also have experience with similar projects.

**Tip:** Hire an IOR appropriate for the project.

Large projects sometime require that occupancy is requested for portions of the construction before all of the work is finished. Discuss your early occupancy needs with OSHPD field staff before construction begins. Use of an integrated project delivery model will address this issue up front.

**Tip:** Discuss your phased occupancy plans with OSHPD field staff before construction begins.

Amended Construction Documents (formerly known as Change Orders) are one of the chief reasons for project delays and cost overruns. Amended Construction Documents (ACDs) are sometimes generated to meet the needs of medical staff after a project receives a building permit or originate from a contractor who has an alternative means

of constructing the project (not approved by OSHPD) to save the hospital money. A building permit is issued for a specific plan reviewed project. All ACDs that materially alter the work of construction need to be reviewed by OSHPD and thus cost time and money. Hospital owners should determine all of the actual cost implications of an ACD prior to requesting it.

**Tip:** *Avoid deviations from approved plans to minimize Amended Construction Documents.*

Ensure that your contract for services with the contractor requires the contractor to adhere to the requirements of the approved plans without deviation. Any work not performed to exact specifications can be ordered removed by OSHPD field staff at any time. If that happens, hold the contractor responsible for costs and lost time resulting from such deviations. Hold the general contractor (GC) responsible for understanding, complying, and building per the OSHPD-approved documents. The GC should be involved with the project early and must work with designers and the hospital to resolve construction issues prior to construction starting. Owner-driven ACDs are common in the rapidly changing healthcare industry, since needs and services often change. As experienced professionals, the hospital owner, designer, and contractor team must assume responsibility for managing and anticipating some of these changes and incorporate flexibility into the design and construction schedules to mitigate ACDs.

**Tip:** *Require that the contractor obtain both the hospital's and OSHPD's approval before deviating from the approved plans.*

Each OSHPD field staff member has a large geographic territory to cover with numerous hospitals to visit. Scheduling field staff visits well in advance of the need for an on-site visit is the norm; however, the trip will be wasted and the construction will face costly delays if the contractor and design team are not properly prepared for the visit. Ensure that your project team understands its responsibility and the ramifications of not being prepared. Typically, the IOR schedules OSHPD staff visits. A hospital representative, who understands the project and has the ability to keep the hospital leadership up to date on the project, should be a participant in these meetings.

**Tip:** *Ensure that your architects and contractors are ready for OSHPD field staff visits.*

## 7.8 Close-out Phase

OSHPD field staff must approve the work before issuing a certificate of occupancy for the construction. Ensure that the observation will be successful by making certain that the work is ready for the review and that all required verified reports, testing and inspection reports, and ACDs have been approved before the final inspection.

**Tip:** *Be prepared for the final OSHPD review.*

The hospital has no right to use the finished work until OSHPD has issued the certificate of occupancy. Normally use for patient care is restricted until Licensing & Certification has licensed the construction or equipment for use following the receipt of the certificate of occupancy.

***Tip: Do not attempt to use any building or equipment or provide any service until the building is approved by OSHPD for a certification of occupancy.***

Approval by OSHPD is often assumed to be the end of the journey. Before OSHPD will log a project as being Closed With Compliance (CLSD) the following needs to occur:

- OSHPD shall schedule a final state agency inspection of the work subsequent to the receipt of the responsible architect or engineer's statement that the contract is performed or substantially performed.
- The final approval of the construction shall be issued by OSHPD when:
  - All work has been completed in accordance with the approved plans and specifications.
  - The required verified compliance reports and test and inspection reports have been filed with OSHPD.
  - All remaining fees have been paid to OSHPD.

Final approval shall be confirmed by a letter sent to the Department of Health Services with a copy to the applicant. The letter shall state that the work has been constructed in accordance with Title 24.

Upon completion of the project, all copies of construction procedure records as required by CAC Section 7-145(a)6 shall be transmitted to OSHPD.

Construction procedure records final verified reports by the AOR, various EORs (e.g., Electrical, Mechanical, and Structural), the IOR, and the contractor, as well as written notice from the hospital asking that the project be closed, and certification of the final construction cost and cost of radiology equipment installed must be submitted. Projects are classified as Closed Without Compliance (CLWC) typically for two reasons:

- Work was abandoned after it began.
- The closing paperwork was not properly filed.

Projects that are logged into the OSHPD database as CLWC do not disappear with the passage of time. They require resolution of the conditions that resulted in the assigned status. Future work may be severely impacted by the existence of CLWC projects when the new projects have to rely on conditions that were created under the CLWC project. The CLWC status can sometimes be cleared retroactively but often with great effort.

If outstanding non-code complying issues remain, the project will be closed without Title 24 compliance (CLWCC). Licensing and Certification will be notified for appropriate action if the non-code compliance issue results in an unsafe condition.

**Tip:** *Ensure the project is closed with compliance.*

## Activation

Although not part of OSHPD's jurisdiction, it is important that project teams are aware of the remaining activities of the project after construction for a facility to become operational. Opening a healthcare facility is a complex process. During Activation, the team strategically works with all stakeholders to bring this phase of the planning process to completion. Activation is the process of preparing people, FFE, and facilities for moving and start-up. The key to a successful activation is the plan and workflow. A successful plan starts well before Activation Day 1. Throughout the project, the team should be noting clinical impacts, ordinary use of the facility, department, etc. so that all elements of use by patients, staff, and visitors are addressed. Some of the tasks in this phase may include:

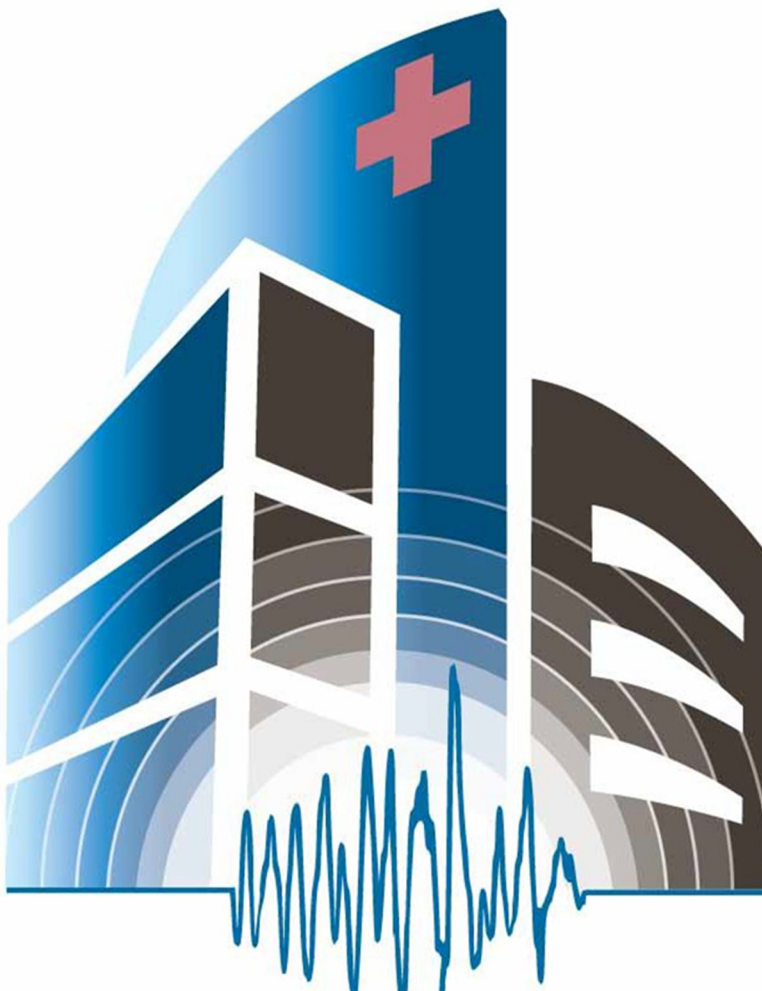
1. Develop department and hospital-wide logistical and operational plans that include support services and workflows.
2. Develop a logistical and operational plan that includes biomedical equipment, furniture, IT, security, cleaning, maintenance, and supply distribution.
3. Ensure readiness for Day 1 Activation inclusive of materials, supplies, and miscellaneous items required for functional operation.
4. Development of recommended staffing matrix.
5. Coordination of training with ancillary and support services for activation.

## GLOSSARY

Acronyms

and

Definitions







## **GLOSSARY**

### **Acronyms and Definitions**

#### **Alternate Method of Compliance (AMC)**

See Materially Alter and Non-Materially Alter.

#### **Amended Construction Document (ACD)**

The instrument through which changes or alterations of the approved construction documents are made. These are prepared by the design professional in responsible charge. All required application forms can be obtained from the HCAI webpage at: <https://hcai.ca.gov/construction-finance/resources/forms-applications-reminder-lists/> or submit online via eService's Portal at <https://esp.oshpd.ca.gov>.

#### **Architect of Record (AOR) and Architect in Responsible Charge**

See Design Professional of Record.

#### **Approved Drawings and Specification**

All drawings, specifications, addenda, amended construction documents and deferred submittals that have the approval of OSHPD and the Hospital Governing Board.

#### **California Administrative Code (CAC)**

Contains the administrative regulations for several state agencies including projects within HCAI authority. The CAC is Part 1 of the California Building Standards Code, Title 24 of the California Code of Regulations. Chapters 6 and 7 contain the administrative regulations specific to OSHPD building types.

#### **California Building Code (CBC)**

The State's adoption of the International Building Code with State amendments. The CBC is Part 2 (Volumes 1 & 2) of the California Building Standards Code, Title 24 of the California Code of Regulations.

#### **California Building Standards Code, Title 24 of the California Code of Regulations (Title 24)**

The State's entire adopted code i.e., the CAC, CBC, CEC, CMC, CPC, CFC, CEBC, and any other adopted building codes or standard. This body of codes is commonly referred to as Title 24. As it applies to this guide, it is the enforceable Title 24 edition for the project per HCAI CAN 1-0 Enforceable Codes.

#### **California Code of Regulations (CCR)**

The codification of the general and permanent rules and regulations of the State of California. There is 28 Title in the CCR.

#### **California Department of Health Care Access and Information (HCAI)**

A Department within the California Health and Human Services Agency. HCAI has many offices and programs including the Office of Statewide Hospital Planning and Development. See OSHPD below.

**California Department of Public Health (CDPH)**

Licensing and certification agency for health facilities.

**California Electrical Code (CEC)**

The State's adoption of the National Electrical Code with State amendments. The CEC is Part 3 of the California Building Standards Code, Title 24 of the California Code of Regulations.

**California Environmental Quality Act (CEQA)**

CEQA is intended to inform government decisionmakers and the public about the potential environmental effects of proposed activities and to prevent significant, avoidable environmental damage.

**California Existing Building Code (CEBC)**

The State's adoption of the International Existing Building Code with State amendments. The CEBC is Part 10 of the California Building Standards Code, Title 24 of the California Code of Regulations.

**California Fire Code (CFC)**

The State's adoption of the International Fire Code with State amendments. The CFC is Part 9 of the California Building Standards Code, Title 24 of the California Code of Regulations.

**California Mechanical Code (CMC)**

The State's adoption of the Uniform Mechanical Code with State amendments. The CMC is Part 4 of the California Building Standards Code, Title 24 of the California Code of Regulations.

**California Plumbing Code (CPC)**

The State's adoption of the Uniform Plumbing Code with State amendments. The CPC is Part 5 of the California Building Standards Code, Title 24 of the California Code of Regulations.

**Certificate of Occupancy (C-of-O)**

The Compliance Officer shall issue a Certificate of Occupancy for all construction projects that require a C of O prior to occupancy of newly constructed building(s), additions or changes of occupancy.

**Code Application Notice (CAN)**

A document published by OSHPD that provides additional information on the proper application of a specific code section. CANs are linked on the Codes and Regulations webpage: <https://hcai.ca.gov/construction-finance/codes-and-regulations/#CANs>.

### **Compliance Officer (CO)**

A member of the Field Compliance Unit that observes construction projects for health facilities in regards to some of the following: plumbing, medical gas, mechanical, electrical, architectural, accessibility, materials and finishes, anchorage and bracing of nonstructural items, secondary structural framing, interior partitions, and ceiling systems as necessary to enforce applicable construction standards, regulations and substantial conformance with the approved construction documents approved by OSHPD and in compliance with Title 24 (including all referenced codes and standards therein), OSHPD's Code Application Notices and other applicable regulations.

### **Construction Final (CF)**

A Construction Final report will be issue by OSHPD to advise the owner/owner's representative that the construction is completed, including all required post approval documents. For final approval of the work, see CAC Section 7-155.

### **Deferred Submittal**

Where a portion of the design cannot be fully detailed on the approved construction document because of variations in product design and manufacture, the approval of the construction documents for such portion may be deferred until the material suppliers are selected. These items shall be listed on the parent project CAC Section 7-126.

### **Department of Health Care Access and Information (HCAI)**

The Office of Statewide Hospital Planning and Development (OSHPD) is one Office within HCAI. OSHPD is the building department for hospitals in the State of California.

### **Design Professional of Record (DPOR):**

Responsible for the project. Depending on the scope of work this may be a California Licensed Architect, Structural Engineer, Civil Engineer, Electrical Engineer, Mechanical Engineer, or a Contractor. See CAC Section 7-115 for more information.

### **District Structural Engineer (DSE)**

DSE is part of the Field Compliance Unit that observes construction projects for health facilities in regards to gravity load bearing and lateral load resisting primary structural frames and systems, and other related structural work as necessary to enforce applicable construction standards, regulations and substantial conformance with the approved construction documents approved by OSHPD and in compliance with Title 24 (including all referenced codes and standards therein), the OSHPD's Code Application Notices and other applicable regulations.

### **Engineering Judgement (EJ)**

An alternative protection method for determining fire resistive assemblies. See OSHPD CAN 2-703.3.

### **Engineer of Record (EOR) or Engineer Responsible Charge**

See Design Professional of Record.

## **e-Services Portal**

OSHPD Internet based project tracking database program found at <https://esp.oshpd.ca.gov>.

## **Field Confirmation**

Field confirmation is a process performed by the field staff in conjunction with other OSHPD staff. The process is intended to guide and assist owners and operators of facilities in determining the classification of projects. The process also provides owners and operators with a written confirmation that the project is a lawful undertaking in compliance with laws and regulations.

## **Fire Department Connection (FDC)**

### **FREER**

Field reviewed projects, exempt projects, and expedited review projects as outlined in OSHPD's FREER manual (see OSHPD website for contents of FREER Manual).

**Field Review (FR):** FR-E-ER projects that are reviewed entirely in the field by the OSHPD field staff. To be eligible for Field Review, the field staff must have availability, and the project must be simple enough to be reviewed by OSHPD field staff within one hour. Field Review projects can that included structural may be extended to two hours.

**Excluded (E):** FR-E-ER projects consists of minor work that may be excluded from OSHPD plan review, building permit, and payment of any fees to OSHPD.

**Expedited Review (ER):** FR-E-ER is an accelerated review conducted in the office for projects of limited scope and complexity. To be eligible for Expedited Review, the estimated review effort for each plan review discipline must be less than two hours.

## **Fire Life Safety Officer (FLSO)**

FLSO is part of the Field Compliance Unit that observes construction projects for health facilities in regards to fire and life safety systems and construction requirements including exiting systems, smoke removal systems, automatic fire/smoke detection and alarm systems, automatic fire sprinkler/suppression systems, fire resistive/rated building construction and all related fire and life safety work as necessary to enforce applicable construction standards, regulations and substantial conformance with the approved construction documents approved by OSHPD and in compliance with Title 24 (including all referenced codes and standards therein), OSHPD Code Application Notices and other applicable regulations.

## **Geotechnical Engineer of Record**

See Design Professional of Record.

### **Health Facility**

Any health facility licensed pursuant to Section 1250 of the Health and Safety Code under the jurisdiction of the Office. See CAC Section 7-111. Any facility, place, or building that is organized, maintained, and operated for the diagnosis, care, prevention, and treatment of human illness, physical or mental, including convalescence and rehabilitation and including care during and after pregnancy, or for any one or more of these purposes, for one or more persons, for which such persons are admitted for a 24-hour stay or longer.

### **Hospital Building**

Any building used for a health facility of a type required to be licensed pursuant to Section 1250 of the Health and Safety Code.

**NOTE:** A Skilled Nursing Facility or Intermediate Care Facility of single story, wood frame or light steel frame construction is not considered a hospital building. See Title 24, Part 1, Section 7-111 for further information.

### **Hospital Inspector of Record (IOR)**

An individual who is:

- (a) An OSHPD certified Hospital Inspector, pursuant to the provisions of CAC Sections 7-144 and 7-200, and
- (b) Employed by the hospital governing board or authority, and
- (c) Approved by the architect and/or engineer in responsible charge and the Office as being satisfactory to inspect a specified construction project.

### **Inspection Services Unit (ISU)**

The ISU supports and trains Field Staff within the regions and works to develop ongoing training and education for the IOR community. The Inspection Services Unit is charged with the review of all matters relative to the quality assurance of healthcare facility projects. Standards of care and practices by project inspection personnel and test laboratories are established and monitored by the unit. Practices associated with the onsite management of the Test, Inspection, and Observation (TIO) Programs are evaluated and modified as needed to improve the statewide application of hospital building construction.

### **Intermediate Care Facility (ICF)**

A health facility that provides the following basic services: 24-hour care to residents who have a recurring need for skilled nursing supervision and need supportive care, but who do not require availability of continuous skilled nursing care.

### **Materially Alter**

Means any change, alteration, or modification to construction projects or approved construction documents, as determined by the Office, that alters the scope of a project, could cause the project to be in noncompliance with Title 24, or causes an unreasonable risk to the health and safety of patients, staff, or the public. Also see Non-Materially Alter. See CAC Section 7-153.

### **National Fire Protection Association (NFPA)**

NFPA is a global self-funded nonprofit organization, established in 1896, devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. The NFPA publishes more than 300 consensus codes and standards, including but not limited to NFPA 70 the National Electrical Code, and other reference standards such as NFPA 13, 72, 99 and 110 used for health care.

### **Non-Materially Alter (NMA)**

See Materially Alter and CAN 1-7-153(b) Non-Material Alteration (NMA).

### **Office of Statewide Hospital Planning and Development (OSHPD or Office)**

The building department for health facility construction in California. OSHPD is an Office within HCAI.

### **OSHPD Preapproval Standard Details (OPD)**

Standard architectural and engineering details develop by OSHPD for use in California health facilities construction, at the discretion of Registered Design Professionals. See PIN 51 – Use of HCAI preapproved and at the following webpage [OSHPD Preapproved Details \(OPD\) - HCAI](#)

### **Policy Intent Notice (PIN)**

OSHPD issues policy intent on specific subjects. PINs are linked on the Codes and Regulations webpage: <https://hcai.ca.gov/construction-finance/codes-and-regulations/>

### **Post Approval Document (PAD)**

Submittals such as Amended Construction Documents (ACD), Deferred Submittal Items (DSI) and Non-Materially Altered (NMA) are submittals after the original project is approved.

### **Regional Compliance Officer (RCO)**

The Regional Compliance Officer (RCO) is the supervisor of the Field Compliance Unit specific to the geographical region. The RCO monitors and evaluates the work activities of District Structural Engineers, Compliance Officers, Fire and Life Safety Officers and ensures the Division's standards of performance and quality are met.

### **Skilled Nursing Facility (SNF)**

Health facility that provides the following basic services: skilled nursing care and supportive care to patients whose primary need is for availability of skilled nursing care on an extended basis.

### **Special Seismic Certification**

OSHPD Established a voluntary Special Seismic Certification Preapproval Program (OSP) to streamline special seismic certifications. The OSP program expedites hospital construction for facility owners, consultants, contractors, and manufacturers by providing preapproval of SSC equipment and components assuring structural stability and functionality. See PIN 55 – Special Seismic Certification Preapprovals (OSP).



### **Substantial Compliance (SC)**

The substantial compliance shall be issued by the CO for a stage(s) of a construction or building project, or a designated portion of the project, that is sufficiently complete in accordance with the approved construction plans and Title 24 such that the owner may use or occupy the building project, or designated portion thereof, for the intended purpose. Substantial compliance does not include a Certificate of Occupancy.

### **Title 24**

See California Building Standards Code above.

### **Testing, Inspection & Observation Program (TIO)**

See [Forms web page TIO section](#).